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DISEASES CAUSED BY BACTERIA AND FUNGI

FAIRBROTHER, R. W., & SOUTHALL, J. E. (1950.) **The isolation of** *Staphylococcus pyogenes* **from faeces.**—*Mon. Bull. Minist. Hlth. publ. Hlth. Lab. Serv.* **9.** 170-172. [Authors' summary copied *verbatim*.] **3190**

A comparison has been made between Ludlam's medium and 10 per cent. salt meat broth for the isolation of *Staph. pyogenes* from faeces; positive results were obtained with 76 (38 per cent.) and 79 (39·5 per cent.) respectively of 200 specimens. An advantage of Ludlam's medium is that the colonies are easily recognizable.

BERNHEIMER, A. W., & CANTONI, G. L. (1947.) **The toxic action of preparations containing the oxygen-labile hemolysin of** *Streptococcus pyogenes*. **III. Induction in mice of temporary resistance to the lethal effect of the toxin.**—*J. exp. Med.* **86.** 193-202. [Authors' summary slightly modified.] **3191**

The susceptibility of mice to the lethal effect of preparations containing the oxygen-labile hemolysin (streptolysin O) of group A hemolytic streptococci has been studied. Injection of a single sublethal dose of such a preparation causes the development of resistance to the effect of a lethal dose injected subsequently. Resistance is demonstrable 3 to 6 hours after injection, persists for approximately 30 hours, and then disappears. Resistance thus induced, although relatively specific, is directed not only against the streptococcal preparation but also against saponin. Mice made refractory to the streptococcal preparation and to saponin exhibit normal susceptibility to a number of other toxic agents, with the possible exception of the alpha toxin of *Cl. welchii*.

Mice injected with a sublethal dose of saponin develop resistance to the effect of a lethal dose of either saponin or the streptococcal preparation. Resistance depends upon processes distinct from those underlying classical antitoxic immunity.

VEREERTBRUGGHEN, W. (1949.) De Streptococcus agalactiae- en de staphylococcenmastitis bij runders. [**Mastitis in cattle caused by** *Streptococcus agalactiae* **and by staphylococci.**]—*Vlaam. Diergeneesk. Tijdschr.* **18.** 121-131. [English, French and German summaries.] **3192**

A general discussion.

JØRGENSEN, K. L., & MICHELSEN, E. (1946.) Mund og Klovesyge-Mastitis. [**Mastitis in cows infected with F. & M. disease.**]—*Maanedsskr. Dyrlaeg.* **58.** 217-233. **3193**

Twenty Red Danish dairy cows, known never to have had F. & M. disease nor to have been vaccinated against it, were used. During a three-day preparatory observation period the udders were examined clinically. In 15 of the cows the udder was normal, symmetrical and healthy; of the remaining five which had changes in the udder, one had one dry quarter and slight abnormalities were found in the milk of two. Chloride and catalase tests, macroscopic examination and cultivation on serum agar slants, carried out on separate samples from each quarter, revealed a constant streptococcal infection in 11 quarters, five of which yielded abnormal milk at each examination and three intermittently, the remaining three yielding normal milk; of 23 quarters with constant micrococcal infection, nine yielded abnormal milk at each examination, one intermittently and 13 yielded normal milk. Of the 45 quarters in which no infection was demonstrable, secretory changes were found in two, of which one was atrophied apparently as a result of a former streptococcal infection. Forty-three of the total 79 quarters could therefore be regarded as normal.

The cows were all inoculated intralingually with F. & M. disease virus of type O and all became typically infected. There was a general marked drop in milk yield. In nine cows, including three with streptococcal infection of one or more quarters, the results of the tests were

unaffected by F. & M. disease. Quarters with micrococcus infections were apparently similarly unaffected. The 11 cows which developed mastitis changes had a total of 23 quarters which remained unchanged; of these 23, two were streptococcus-infected and the remainder normal. Of the total 79 quarters, 58 therefore remained apparently unaffected by F. & M. disease; 48 of these were normal, six had streptococcal infections and four had micrococcal infections with secretory changes. Of the 21 quarters which developed clinically demonstrable mastitis during the course of F. & M. disease, five had been infected with streptococci and six chronically infected with micrococci with secretory changes before the inoculation.

The cases of mastitis fell into two distinct groups, the first becoming manifest early (second day) after F. & M. disease infection, the second late (sixth day). In the latter group mastitis took a more serious course; it occurred in every case in cows which had vesicles on the teat tips and at the time when the vesicles were broken.

Daily examination of mixed milk samples from the quarters of each cow by intracutaneous inoculation of equal quantities from each sample into the plantar pads of four g. pigs revealed that each of the 20 cows shed virus in their milk from the second day after infection for 8-10 days. Intralingual inoculation of three healthy cattle using bulked samples of milk taken from ten of the infected cows on the 12th day after infection set up typical F. & M. disease in two. The authors concluded that F. & M. disease virus can be shed in the milk of infected cows for at least 12 days after infection.—F.E.W.

RØMER, O. (1949.) Mastitisproblemer. [**Mastitis problems.**]—*Nord. vet.-Med.* **1.** 509-527. [Abst. from English summary.] **3194**

A survey is given of the streptococcus species occurring in bovine mastitis, together with an account of their occurrence based on the examination of 298 herds, comprising altogether 9,916 cows. In this material the percentage of infection was found to be 32·6 for cows with streptococci of Group I, while it was 1·9 for Group II, 3·1 for Group III, and 1·1 for Groups A, Ca, G and N (Ernst) collectively, 1·0 for staphylococci (secretory changes being present in such infections), and 0·44 for *C. pyogenes*.

An account is given of an experiment in the control of mastitis carried out by the State Veterinary Serum Laboratory, Copenhagen, on 100 herds with a total of about 4,000 cows. Through this work the percentage of infection for cows infected with streptococci of Group I was reduced from 36·2 to 4·3. In 58 herds no strain of Group I-streptococci could be demonstrated at the last examination.

Mention is made of the penicillin treatment of quarters infected with streptococci of Group I. In seven infected herds thus treated, 88·3% of the cows recovered as did 93·8% of the newly infected cows.

The principles are outlined for control of mastitis, based on the diagnosis, isolation and elimination of the infection.

WILLCOX, P. H. (1950.) **Streptomycin in subacute bacterial endocarditis. Report of three cases.**—*Lancet.* **259.** 288-290. [Author's conclusions and summary copied *verbatim*.] **3195**

There is evidence that streptomycin is an effective weapon in subacute bacterial endocarditis and deserves further trial in cases due to penicillin-insensitive organisms and in those in which there are troublesome reactions to penicillin.

Three cases with aortic and mitral valvular disease, treated successfully with streptomycin after penicillin in liberal doses had proved ineffective, are reported here.

Clinically the diagnosis was not in doubt, in spite of the failure to grow the organisms by blood-culture.

FOURIE, P. J. J., DE WET, G. J., & VAN DRIMMELEN, G. C. (1950.) **Tuberculosis in pigs caused by *M. tuberculosis* var. *hominis*.**—*J. S. Afr. vet. med. Ass.* **21.** 70-73. [Authors' summary copied *verbatim*.] **3196**

An outbreak of subclinical tuberculosis in domestic pigs is described. The disease was controlled by slaughter of reactors found when the herd was tuberculin tested on two occasions only. The cause of the outbreak was proved by biological tests on small and large animals to be *Mycobacterium tuberculosis* var. *hominis*.

OBIGER. (1950.) Über die Hauttuberkulose. [**Skin tuberculosis.**]—*Rdsch. Fleischbesch.* **2.** 6-7. **3197**

A brief note. No new material.

—G. P. MARSHALL.

LÉVI-VALENSI, A., CVIKLINSKY, S., & VAUGIER, M. (1949.) Recherches sur la virulence comparée de B. de Koch chez les tuberculeux pulmonaires Algériens, Européens et Mussulmans. [**Virulence of tubercle bacilli.**]—*Rev. Tuberc., Paris.* **13.** 448. [Abst. in *Amer. Rev. Tuberc.* **61.** No. 5. pp. 100-101 of Absts. (1950), copied *verbatim*.] **3198**

Comparison was made between the virulence of tubercle bacilli from European and

Mussulman patients in the city of Algiers where tuberculosis morbidity and mortality is considerably higher in the latter group. The cases were divided into acute, subacute, and chronic groups. Equal amounts of a pure culture of tubercle bacilli derived from sputum of each patient was injected into guinea pigs and the virulence was estimated by the survival time of the animals. A certain correlation could be established between the acuteness and gravity of the disease and the virulence of the organisms. No difference was found in the survival time of guinea pigs injected with cultures from European and Mussulman patients with corresponding types of disease.

KARLSON, A. G., DELAUDE, A., CARR, D. T., PFEUTZE, K. H., & FELDMAN, W. H. (1949.) **The occurrence of tubercle bacilli resistant to p-aminosalicylic acid.**—*Dis. of Chest.* **16.** 667. [Abst. in *Amer. Rev. Tuberc.* **61.** No. 5. p. 97 of Absts. (1950), copied *verbatim.*] **3199**

Most reports on the *in vitro* sensitivity to *p*-aminosalicylic acid (PAS) indicate that human tubercle bacilli are sensitive to low concentrations of the agent. A total of 107 cultures of human tubercle bacilli and 2 cultures of bovine tubercle bacilli have been examined; all, including 15 human-type cultures which were resistant to streptomycin, were sensitive to low concentrations of PAS. Tubercle bacilli from 8 cases treated with PAS alone for prolonged periods were examined; strains from 4 of these were resistant *in vitro* to high concentrations of PAS. No conclusion could be drawn as to the relationship between the sensitivity of the bacilli and the response of the patient to therapy. Of a group of 10 patients treated with streptomycin, PAS, and Promin, only one was found after treatment to have streptomycin-resistant bacilli and one other had PAS-resistant tubercle bacilli.

YOUMANS, G. P., IBRAHIM, A., SWEANY, J., & SWEANY, H. C. (1950.) **A direct method for the determination of the sensitivity of tubercle bacilli to streptomycin.**—*Amer. Rev. Tuberc.* **61.** 569-577. [Spanish summary. English summary copied *verbatim.*] **3200**

A method is described for performing streptomycin sensitivity tests on tubercle bacilli by culturing sputum concentrates directly on solid medium containing streptomycin. Using a nutrient agar egg yolk medium, 2,009 specimens of sputum were cultured. Growth of tubercle bacilli was obtained from 1,328 and of these the sensitivity to streptomycin was determined on 68·8 per cent. in two to four weeks. The results of the tests on the remaining 31·2 per cent. were invalidated because of scanty growth, irregular growth, or contamination.

Use of the method has resulted in a marked reduction of the time usually required for completion of the tests; it has been more economical of labor and materials, and has been of great value to clinicians in controlling treatment.

JOHNSON B. H. (1950.) **Plate method for the determination of streptomycin sensitivities of** *Mycobacterium tuberculosis.*—*Amer. Rev. Tuberc.* **61.** 578-581. [Spanish summary. English summary copied *verbatim.*] **3201**

A technique has been developed in which a Petri dish was used for the determination of streptomycin sensitivities of *Mycobacterium tuberculosis.* An estimate of the number of resistant organisms in a particular culture may be noted better by the use of the Petri plate than with the test tube growth using solid egg media. The Quebec colony-counter is a helpful aid in giving a more accurate count when using the plate method. Thus, the per cent. of growth at a given concentration of a drug can be compared with the growth on a control plate.

HURWITZ, C., & MILLER, J. B. (1950.) **Effect of triton A-20 and pH value on the streptomycin sensitivity of a resistant strain of** *M. tuberculosis.*—*Amer. Rev. Tuberc.* **62.** 91-98. [Spanish summary. English summary copied *verbatim.*] **3202**

The effect of Triton A-20 [a surface-active agent] concentration and pH on the sensitivity of a resistant strain of *M. tuberculosis* to streptomycin was studied. At an initial pH of 7·0, the tubercle bacillus grew in the presence of 10, but not of 100, γ of streptomycin per ml. of medium. At an initial pH of 6·5, the bacteria grew in as high a concentration as 1,000 γ of streptomycin per ml. At an initial pH of 6·0, the organism grew well in 1,000 units of streptomycin per ml. and displayed optimum growth between 100 and 500 γ of streptomycin per ml.

Triton A-20 had an enhancing effect on growth in lower concentrations and an inhibiting effect in higher concentrations. Optimum growth occurred at 0·10 per cent. concentration. Triton A-20 became increasingly inhibitory to the tubercle bacilli as the pH was increased above. 7·0. Variations in concentration of Triton A-20 appeared to have no effect on streptomycin sensitivity of tubercle bacilli.

The possible use of an alkaline aerosol solution of Triton A-20, with or without streptomycin, for the treatment of pulmonary tuberculosis is discussed.

Bernstein, S., Bradley, E. M., Medlar, E. M., & Steenken, W., Jr. (1950.) **Comparison of a liquid and a solid medium method for detection of streptomycin-resistant** *Mycobacterium tuberculosis.*—*Amer. Rev. Tuberc.* **62.** 101-108. [Spanish summary. English summary copied *verbatim.*] **3203**

A comparison is presented of the Dubos Tween-albumin serial dilution of streptomycin technique with an inspissated solid medium in which streptomycin is incorporated. A close agreement between the two methods was found in those instances in which the bacterial population as a whole was either sensitive or resistant to streptomycin. There was a discrepancy in 30 per cent. of instances in which the liquid-medium technique revealed good growth in concentrations of more than 5 but less than 1,000 γ of streptomycin per ml. In these instances it appears that the solid-medium method is preferable in that it indicates the relative proportion of the bacterial population from direct inoculation of specimens which is resistant to streptomycin as well as the degree of resistance. The random samples from primary growth on the control tubes used in the liquid-medium method may not be representative of the population unless the population as a whole is either sensitive or resistant to streptomycin.

Incorporation of different concentrations of streptomycin in an inspissated egg yolk-potato-glycerine-malachite green medium affords a practical routine method for determining the resistance of *M. tuberculosis* to this drug from the growth obtained directly from concentrates of sputum and other specimens.

A method of reporting *in vitro* resistance studies on individual cultures is presented. Qualitative and quantitative changes in random samples of the bacterial population are easily detected from cultures of concentrates of specimens from a patient during or after streptomycin therapy. It is believed that retesting by subculture is not necessary provided a growth of more than 20 colonies is present on the culture medium which contains no streptomycin.

Gomori, G. (1950.) **The distribution of iron in tuberculous granulation tissue.**—*Amer. Rev. Tuberc.* **61.** 560-562. [Spanish summary. English summary copied *verbatim.*] **3204**

Tuberculous granulation tissue of the rat stores ferric iron; similar lesions in other species are practically free from this element.

Sicca, G. T. (1949.) Il comportamento verso il bacillo tubercolare del midollo osseo umano coltivato *in vitro.* [**Phagocytic activity of bone marrow.**]—*Lotta c. Tuberc.* **19.** 210. [Abst. in *Amer. Rev. Tuberc.* **61.** No. 4. p. 82 of Absts. (1950), copied *verbatim.* Signed: A. Mochi.] **3205**

A comparison between cultures of human bone marrow shows that the marrow of tuberculin-sensitive individuals has a far greater phagocytic activity than the marrow of individuals not sensitized to tuberculin. Marrow cultures inoculated with tubercle bacilli have a high phagocytic activity in the first 48 to 60 hours but this capacity is less when more virulent strains of bacilli are used. Thus tubercle bacilli of the avian type are phagocyted in greater amounts than bacilli of bovine or human strains. The presence in the cultures of serum originating from infected or non-infected individuals does not influence the phagocytic properties of the culture, but the marrow of infected individuals retains *in vitro* a specific hypersensitivity to tuberculin. Theoretically it is possible that the greater phagocytic activity and the hypersensitivity to tuberculin of the marrow of tuberculous individuals are both an expression of the defensive character of allergy.

Shtiben, V. D. (1947.) [**Immunization of g. pigs by inhalation of BCG.**]—*Zh. Mikrobiol., Moscow.* No. **9.** pp. 83-88. **3206**

Increased resistance was conferred on g. pigs against *Mycobact. tuberculosis* var. *hominis* by inhalation of a total of 312 mg. BCG in three doses over a period of 12 days. The test dose of infected material, given 11 days later, consisted of a suspension of 0·0054 mg. of dried culture given subcutaneously or of 27 mg. by inhalation. The three immunized g. pigs in the former group survived an average of 86 days; the five in the latter group survived for an average of 70·2 days; seven controls averaged 57 days. The above tests proved that inhalation of BCG only postponed but did not prevent fatal infection.—F.A.A.

Sandage, C., & Birkeland, J. M. (1950.) **Effect of intravenous tuberculin injections on subsequent tuberculin skin reactions in hypersensitive rabbits.**—*Amer. Rev. Tuberc.* **61.** 556-559. [Spanish summary. English summary copied *verbatim.*] **3207**

In tuberculin-hypersensitive rabbits, intravenous injection of PPD some hours before skin-testing resulted in an accelerated cutaneous reaction. Such reactions were smaller in area and more intense than were those in control animals. These results and data reported by others are discussed in an effort to explain the mechanism of the delayed tuberculin reaction.

RYRIE, G. A. (1950.) **Thiosemicarbazone in the treatment of leprosy.**—*Lancet.* **259.** 286-287. [Author's conclusion slightly modified]. **3208**

It is obviously far too soon to make anything more than a tentative assessment of the early effects of treatment. But the clinical and bacteriological effects of thiacetazone (*p*-acetyl amino benzaldehyde thiosemicarbazone), and its apparent lack of toxicity, suggest that it is well worth fuller study.

WOODBINE, M. (1950.) *Erysipelothrix rhusiopathiae.* **Bacteriology and chemotherapy.**—*Bact. Rev.* **14.** 161-178. 182 refs. [Author's summary modified.] **3209**

The chemotherapy of infections by *E. rhusiopathiae* may be summarized by the following statements.

All the strains of *E. rhusiopathiae* examined are resistant *in vitro* to those sulfonamides owing their activity to reversal of *p*-aminobenzoic acid, and are not amenable to chemotherapy with these compounds. All strains of *E. rhusiopathiae* are sensitive to benzylamine-4-sulfonamide, penicillin and streptomycin *in vitro*, and penicillin is more active, weight for weight, than streptomycin. Penicillin and streptomycin, in high doses, protect mice against infections by *E. rhusiopathiae* and a synergic action is obtained with penicillin and streptomycin simultaneously.

BÜRGISSER, H. (1949.) Contribution à l'étude du rouget du porc chez les volailles. [*Erysipelothrix rhusiopathiae* **infection in poultry.**]—*Schweiz. Arch. Tierheilk.* **91.** 82-84. [In French; German summary.] **3210**

B. isolated *E. rhusiopathiae* from a turkey and a goose which had died suddenly; no characteristic lesions were found on P.M. examination. The source of the infection was stated to be offal from slaughtered pigs.
—L. G. DONALD.

SCHELLNER, H., & SEYERL, F. (1949.) Über die Bedeutung des Haemagglutinationshemmungstestes bei der Gewinnung des Rotlaufserums vom Pferd. [**The value of the haemagglutination-inhibition test in erysipelas serum production from horses.**]—*Tierärztl. Umsch.* **4.** 225-226. **3211**

Using a slide haemagglutination-inhibition test with fowl erythrocytes the authors found a positive correlation between the titre of the test and that of the mouse protection test. Although this test cannot replace the mouse protection test for determining the potency of horse erysipelas serum it is suggested that it provides a useful practical guide to the titre of the serum.—E. G. WHITE.

POUSKA, F. (1950.) Listerellosis. [*Erysipelothrix* (*Listeria*) *monocytogenes* **infection.**]—*Čas. československ. Vet.* **5.** 57-58. **3212**

A general discussion on *E. monocytogenes* infection. P. considered on clinical grounds that he had seen the disease in sheep in Czechoslovakia during 1940-42 but the infection was not confirmed bacteriologically. The sheep had rhinitis, conjunctivitis and brain symptoms. *Coenurus cerebralis* was not found.
—E.G.

PLUMMER, P. J. G., & BYRNE, J. L. (1950.) *Listeria monocytogenes* **in lemming.**—*Canad. J. comp. Med.* **14.** 214-217. [English and French summaries. English summary copied *verbatim.*] **3213**

Listeria monocytogenes has been isolated from lemming [*Lemmus trimucronatus-trimucronatus*]. In this species the disease would seem to resemble that described for rabbits, guinea pigs and certain other small animals.

MITROVIĆ, M. (1949.) Un caso di pasteurellosi dell gatto. Studio dello stipite di pasteurella isolato. [*Pasteurella* **infection in a cat. Study of the strain isolated.**]—*Clin. vet., Milan.* **72.** 97-107. **3214**

M. described a pasteurella infection in a cat and compared the isolated strain with some pasteurella strains of varying origin. When inoculated into fowls this strain did not transmit the infection, but immunized the fowls against fowl cholera.—B. BALDELLI.

ANON. (1949.) **Use of the term 'coliform'.**—*Nature, Lond.* **163.** 394. **3215**

As the term "coliform" has for some time had an obscure meaning, a committee appointed by the Society for General Microbiology and by the Society for Applied Bacteriology have proposed the following definition: the term coliform means "like *Bacterium coli*" or "coli-like"; it is an adjective and has no generic or ecological significance. It is proposed that the term "coliform" should refer to gram-negative rods resembling *Bact. coli* in morphology and staining reactions, but not necessarily in cultural and biochemical characteristics.
—E. EDEN.

EDWARDS, P. R., & WEST, M. G. (1950.) **New** *Salmonella* **type:** *Salmonella duval.*—*Publ. Hlth. Rep., Wash.* **65.** 839. [Authors' summary copied *verbatim.*] **3216**

A new *Salmonella* type, *Salmonella duval*, having the antigenic formula I, XL:b-e, n, z_{15} is described. It is represented by two cultures both of which were isolated from the intestinal tracts of normal dogs.

BUTTIAUX, R., & GAUMONT, R. (1948.) Infection mortelle d'un éléphant par Salmonella oslo. [*Salmonella oslo* **infection in an elephant.**]—*Bull. Acad. vét. Fr.* **21.** 339-342. **3217**

S. oslo was isolated from the spleen of a young circus elephant that had died from acute enteritis. Another older elephant in the same circus was found to carry both *S. oslo* and *S. paratyphi B.*—A. MAYR-HARTING.

BEEKMAN, L. M., & BERGSMA, C. (1950.) Een simultane humane en animale contact-infectie veroorzaakt door Salmonella-newport. [**Simultaneous** *Salmonella newport* **infection in man and animals.**]—*Tijdschr. Diergeneesk.* **75.** 273-280. [English, French and German summaries. English summary slightly amended.] **3218**

A family infection by *Salmonella newport* is reported. Four members weakened from other causes contracted gastro-enteritis; one of them died. Four healthy members of the family and two house cats were carriers. One of the cats is considered to have been the origin of the outbreak.

GORHAM, J. R., CORDY, D. R., & QUORTRUP, E. R. (1949.) **Salmonella infections in mink and ferrets.**—*Amer. J. vet. Res.* **10.** 183-192. **3219**

It is difficult to set up infection in mink and ferrets by feeding with organisms of the *Salmonella* group. Starvation helped to establish the infection in two out of 29 animals. Simultaneous or preceding attacks of distemper, thought by some to facilitate a salmonella infection, had no such effect in the present case, nor had treatment with an anthelmintic.

[The review of the literature given is difficult to follow. The authors use such expressions as "*Salmonella aertrycke* of the Gärtner group of *Bacterium breslau.*"]

—A. MAYR-HARTING.

NORDBERG, B. K., & EKSTAM, M. (1950.) Salmonelloser hos höns. [**Salmonellosis in fowls.**]—*Nord. Vet.-Med.* **2.** 23-30. [English and German summaries. Abst. from English summary.] **3220**

From the dead fowls received in 1946-49 by the State Veterinary Medical Institute, Stockholm, besides *S. pullorum* and *S. gallinarum*, the following salmonella species were isolated: *S. chester, S. derby, S. choleraesuis, S. thompson, S. oranienburg, S. oregon, S. enteritidis, S. dublin, S. taksony, S. worthington* and *S. kentucky*. From the accounts of the methods of infection given by the various authors it is evident that, among others, spread among fowls may take place through the employment of restaurant waste and food scraps from households. Rats might also help to spread the infection through pollution of the chicken feed.

Infection may also occur between the fowls and their attendants. The most extensive spread of infection is probably from hatching eggs and chicks purchased from flocks in which salmonellosis is uncontrolled. More thorough control of salmonella infection in poultry is desirable. This might be practicable by supplementing the serological examination for pullorum disease with tests against the antigens of the B, C, D and E groups, and the O antigen of *S. kentucky* and *S. worthington.*

CARTER, M. J., POWELL, M. P., & BORTS, I. H. (1950.) *Salmonella* **in hen eggs.**—*Publ. Hlth. Rep., Wash.* **65.** 778-781. [Abst. from authors' conclusions.] **3221**

One hundred and eighty-six samples, each from mixed batches of eggs, were taken from 56 cases of eggs (30 dozen per case), the procedure being such that any micro-organisms recovered could have been derived only from the contents or the shells of the eggs. Positive cultures were obtained from six samples; *S. paratyphi B* was recovered from one sample and *S. pullorum* from the remaining five.

Although *Salmonella* infection has only occasionally been demonstrated in hens' eggs, the possibility of the transmission of these organisms by serving uncooked eggs should be recognized. The danger of infection is greater than has previously been recognized.

I. BRAUDE, A. I., & ANDERSON, D. (1950.) **The pathogenesis and pathology of experimental brucellosis.**—Washington: American Association for the Advancement of Science. Brucellosis: A Symposium. pp. 50-61. [Authors' summary and conclusions copied *verbatim.*] **3222**

II. IRWIN, M. R., & BERMAN, D. T. (1950.) **Bactericidal tests in brucellosis.** Washington: American Association for the Advancement of Science. "Brucellosis. A Symposium." pp. 85-97. [Authors' general statements copied *verbatim.*] **3223**

III. ROEPKE, M. H. (1950.) **The *Brucella abortus* ring test.** Washington: American Association for the Advancement of Science. Brucellosis: A Symposium. pp. 126-135. [Author's summary slightly modified.] **3224**

IV. CARLE, B. N., & LARSON, C. L. (1950.) **Chemotherapy of experimental brucellosis in guinea pigs.** Washington: American Association for the Advancement of Science.

Brucellosis: A Symposium. pp. 155-171. [Authors' summary copied *verbatim*.] **3225**

V. MANTHEI, C. A. (1950). **Brucellosis in cattle.** Washington: American Association for the Advancement of Science. Brucellosis: A Symposium. pp. 172-187. [Author's summary copied *verbatim*.] **3226**

VI. BOYD, W. L. (1950.) **Brucellosis in animals other than cattle or swine.** Washington: American Association for the Advancement of Science. Brucellosis: A Symposium. pp. 198-203. [Author's summary and conclusions copied *verbatim*.] **3227**

I. The pattern of disease in experimental brucellosis varies with the species of *Brucella* producing the infection.

The formation of the hepatic granuloma in the earliest stages of experimental brucellosis due to *Br. abortus* is related to the cellular defense of the host. The granuloma undergoes transformation in form during the course of the infection and ultimately vanishes without residual scar when infection ceases.

Hypersensitivity does not appear to be essential to the formation of the granuloma in experimental brucellosis due to *Br. abortus*, although antigens introduced into sensitized tissues are met with a granulomatous reaction in which Langhans giant cells are prominent.

II. The bactericidal index of normal cattle and of those vaccinated with strain 19 of *Br. abortus* has not been an accurate criterion to date of their response to an induced exposure. However, there is no reasonable doubt in our minds but that the bactericidins toward *Br. abortus* in the sera of cattle play a definite role—but not a major role—in the battle between the host and the invading organism. Depending as the bacterial activity of a serum does upon the combined action of antibody and complement, it seems that the next step is to assay in experimental animals the variations in the concentrations of complement as well as of the bactericidins. It is of course an open question as to how much further insight the information thus obtained will provide on the fundamental question of why, within a population of normal, vaccinated, or ceased-reactor animals, one animal will be resistant and another susceptible to the same exposure of *Br. abortus*.

It can be stated beyond any reasonable doubt that the serum of all, or nearly all, normal cattle is capable of destroying *in vitro* 10,000 or more organisms of *Br. abortus*. The serum of nearly all vaccinated (with strain 19, *Br. abortus*) and infected animals possesses a higher titer of bactericidins than that of normal animals. Keeping these facts in mind and assuming that complement is as active *in vivo* as it is *in vitro*, one may well wonder how *Br. abortus* can initiate an infection in a normal bovine. Obviously, following an exposure the organisms within the animal are not subjected directly to the action of the serum, or else the serum in the animal body does not have the same killing power that it has in the test tube. It has been reasonably well established that the Brucella grow intracellularly, which may be a partial explanation of the failure of the serum bactericidins of the host to destroy it. The chain of events taking place within the animal body following an exposure to the pathogen must be very complex, and thus far our knowledge of what happens is very limited indeed. Our lack of knowledge in this fundamental field therefore presents a distinct challenge for further work.

III. The results of the studies on the ring test are summarized briefly in terms of simple approximate ratios as follows: (1) The ring test was positive on 2 out of 3 herds classed as infected on the basis of the blood serum agglutination test results. (2) Of the failures of the ring test on infected herds 2 out of 3 of the failures were due to the fact that the only infected animal or animals in the herds were not in production, i.e., they were heifers and dry cows. (3) The ring test was positive on 9 out of 10 herds in which one or more infected animals were in production. (4) In 2 out of 3 herds positive to the ring test there was agreement with the blood test results. (5) When reasonable efforts were made to collect as many specimens of milk or cream as possible over a period of 5 or 6 days at cream buying stations, creameries and dairy plants, specimens were obtained from 80 to 90 per cent. of the herds in predominantly dairy counties. In the western part of the state where beef herds were more numerous the percentage was as low as 65 per cent. (6) The results of the study indicate that in counties where dairying is predominant, one country-wide test may be expected to serve as a means of locating 55 to 60 per cent. of the infected herds and two tests six months apart, to disclose 75 to 80 per cent. of the reactor herds. (7) Owing to the extreme sensitivity of the ring test, herd milk specimens collected from the weighing tank do not give as reliable results as those collected from the milk cans.

IV. An experimental method using guinea pigs for assessing therapeutic agents in brucellosis is described. Criteria used in evaluating the effect of therapy consisted of spleen weights, agglutination titers, and splenic cultures.

Sulfadiazine in a dosage of 0·2 gram per kilogram per day given orally in one daily dose

for 14 days altered the course of the disease beneficially and rendered some animals free from infection. Streptomycin used alone in dosages from 30 to 80 milligrams per kilogram per day given subcutaneously every 4 hours for 14 days showed no effect on the course of the disease. Addition of 30 to 60 milligrams of streptomycin per kilogram of body weight given subcutaneously every 4 hours for 14 days increased the beneficial effect obtained from 0·2 gram of sulfadiazine per kilogram per day given orally in one daily dose for 14 days. Aureomycin given subcutaneously proved toxic for guinea pigs. In the highest tolerated dose of 12·5 milligrams per kilogram per day administered subcutaneously every 4 hours for 9 days there was a beneficial effect on the course of the disease. Addition of streptomycin to aureomycin enhanced the beneficial effect. Chloromycetin given subcutaneously every 4 hours for 14 days in a dose of 70 milligrams per kilogram per day did not alter the course of the disease. Combined sulfadiazine and streptomycin therapy was more effective in animals receiving small numbers (10 to 50) of *Brucella* organisms for infecting challenge than in those receiving larger numbers (500 to 4,000). Treatment with sulfadiazine in combination with streptomycin started 2 days and 35 days after infection was more effective than similar treatment begun 14 days after infection.

V. Evidence has been submitted showing that cattle are susceptible to both *Br. suis* and *Br. melitensis*. However, the disease in cattle produced by these 2 species of *Brucella* appears to be more self-limiting than that produced by *Br. abortus*. Sexually mature, non-pregnant heifers are susceptible to virulent *Br. abortus* under the field exposure described. Preliminary studies show that infected bulls, eliminating *Br. abortus* in the semen, are a means of spreading brucellosis to susceptible heifers and cows through artificial insemination.

Aureomycin was ineffective as a curative agent against chronic brucellosis in lactating cows.

The A.B.R., or milk ring test, has shown possibilities as a screening procedure for diagnosing bovine brucellosis in the herd.

Studies on unvaccinated, strain 45/20 vaccinated and strain 19 vaccinated cattle exposed to virulent *Br. abortus* show that the incidence and persistence of blood infections are related to the degree of resistance of the animal.

Urogenital and blood infections have been shown to persist in some cattle for as long as 101 and 97 weeks respectively.

The factors which influence the incidence of infection and the course of the disease in cattle artificially exposed to *Br. abortus* are virulence of the infective agent, amount of exposure, and susceptibility of the individual. The variations observed in artificial exposure experiments emphasize the need for standardizing procedues for evaluating immunizing agents.

Vaccination of adult cattle with strain 19 vaccine in a recently infected herd decreased the rapid spread of the disease. The beneficial effect of vaccination is enhanced by sanitary measures and good herd management. Although strain 19 caused a limited amount of infection, it did not permanently localize in any of the affected cows. Regardless of the method of vaccination employed, most of the adult cattle developed and retained blood agglutinin titers of 1 : 100 or over for 2 years.

The subcutaneous injection of 5 milliliters of strain 19 vaccine in recently *Brucella*-infected cattle had little or no effect on the natural course of the disease.

VI. Domestic animals other than cattle or swine that may become infected with *Brucella* organisms include goats, horses, sheep, dogs, and fowl. The literature contains reports of natural infection in wild animals such as moose, deer, elk, and bison, all of which in certain regions may serve as animal reservoirs. The characteristics of brucellosis in goats are similar to those manifested by cattle. *Brucella melitensis*, responsible for the disease in goats, may also produce infection in man, cattle and swine. Brucellosis in horses is common and is still important as a reservoir of brucellosis. The importance and prevalence of brucellosis of sheep in the United States remains undetermined. Sheep, in the author's opinion, possess a high degree of natural resistance. Brucellosis of poultry is relatively unimportant. The same may be said of the dog and cat. There is some evidence that the common barnyard rat may be an occasional host for *Brucella* organisms.

The serum agglutination test is a dependable method for the diagnosis of brucellosis in animals, both domestic and wild.

Washko, F. V., Hutchings, L. M., & Donham, C. R. (1948.) **Studies on the pathogenicity of Brucella suis for cattle. I.**—*Amer. J. vet. Res.* 9. 342-350. 3228

Exposure of cattle to *Br. suis* resulted in transient agglutination responses. Resistance to subsequent infection with *Br. abortus* was not increased. Introduction of *Br. suis* into the udder was followed by active infection with elimination of the organism in the milk.

—Roy Mack.

BOLIN, F. M., GOLDSBY, A. I., RHEAULT, P., & EVELETH, D. F. (1949.) **Brucellosis in North Dakota deer—a survey.**—*Bull. N. Dak. agric. Exp. Sta.* **11.** 102-103. **3229**

One out of 436 deer reacted to the agglutination test for *Br. abortus*.—ROY MACK.

VERSHILOVA, P. A. (1947.) [**Research in active immunization against brucellosis.**] —*Zh. Mikrobiol., Moscow.* No. **11.** pp. 80-83. **3230**

This is a general review of brucellosis immunization in the U.S.S.R. from 1930-47. The chief aim has been to determine the character and quality of the immunizing factors.

Of a number of broad observations on the killed culture variety of vaccine, the most successful was a semi-liquid formol vaccine described by Muromtsev [See *V.B.* **16.** 97], which is stated to have given 90% immunity in mice against a virulent strain of brucella organisms, and 60-80% immunity in g. pigs (intradermal and intramuscular injections followed by subcutaneous injections of *Br. melitensis* to test the immunity). A combination of this vaccine with the polysaccharide-lipoid antigen used by Boivin gave 56% immunity in g. pigs against ten virulent doses of *Br. melitensis*.

Opinions vary regarding the effectiveness of killed culture vaccines. Some authors, including Muromtsev, maintain that various types of such vaccines are able to prevent abortion in cows and sheep and, also, largely to confer immunity against infection.

Live vaccines have proved successful in Russia. V. states that she used an avirulent *Br. suis* vaccine which gave immunity to 70% g. pigs against a test dose of virulent culture. Strain 19 vaccine gave 100% immunity. The prophylactic use of killed and live vaccines yielded the same results when tested on human beings.

Russian workers consider that animals normally recover naturally from brucellosis, remain carriers for a time and then become immune. This immunity, should, however, be regarded as only relative.—F.A.A.

MOORE, T., & MITCHELL, C. A. (1950.) **Vaccination of sexually mature cows with *Brucella abortus* strain 19 vaccine.**—*Canad. J. comp. Med.* **14.** 209-213. [Authors' summary copied *verbatim*.] **3231**

One hundred and eighty-eight non-pregnant cows and 181 pregnant cows were vaccinated. One hundred and thirty-three (70·74%) of the non-pregnant cows and 113 (62·43%) of the pregnant cows had returned to negative within two years after vaccination. Fifty-three (39·84%) of the former and 37 (32·74%) of the latter became infected at a later date.

Fifty-five (29·26%) of the non-pregnant cows and 68 (37·57%) of the pregnant cows had not returned to negative two years after vaccination. Fifteen (27·27%) of the former and 21 (30·88%) of the latter showed a gradual but steady decline in serum titre. The remaining animals in each of these groups showed a steady rise in serum titre.

Two cows which were not pregnant at the time of vaccination were shedding *Br. abortus* from the mammary gland and uterus respectively, following parturition. Agglutination tests of serum and whey from each of these animals were negative.

Thirty cows that were pregnant between six and nine months were vaccinated. Four (13·33%) of them aborted. *Br. abortus* was not demonstrated in the cream or uterine exudate of any of them.

COLE, L. J., & BRAUN, W. (1950.) **Studies on the chemical nature of a normal plasma factor which suppresses variation of *Brucella abortus*.**—*J. Immunol.* **64.** 111-122. [Authors' summary copied *verbatim*.] **3232**

Normal bovine serum, and plasma globulin Fractions II and III-O, which produce a selective suppression of the establishment of non-smooth variants in broth cultures of *Brucella abortus*, were subjected to dialysis, pH changes, heat treatment, and to the action of proteolytic enzymes, polynucleotidases, urea, guanidine, formaldehyde, and other chemical reagents. The effects of such treatment upon the selective activity were investigated.

The results indicate that the selective activity is referable to non-dialyzable protein components, and that bovine plasma contains two distinct substances which possess this selective activity. One, a γ-globulin protein, is stable at low pH, and is inactivated by 6M guanidine hydrochloride. The other appears to be a lipoprotein, associated with a β-globulin fraction; it is very unstable at low pH, resistant to 6M guanidine, and destroyed by freezing to −25°C in the presence of ether.

WOODWARD, T. E., RABY, W. T., EPPES, W., HOLBROOK, W. A., & HIGHTOWER, J. A. (1949.) **Aureomycin in treatment of experimental and human tularemia.**—*J. Amer. med. Ass.* **139.** 830-832. [Authors' summary copied *verbatim*.] **3233**

Aureomycin has been found to exert significant beneficial effect in mice experimentally infected with tularemia. Chloromycetin has demonstrated much less effect

in vivo. Three cases of tularemia are reported. The response of the patients to aureomycin therapy is regarded as comparable to streptomycin therapy in degree of effectiveness.

PARKER, R. T., LISTER, L. M., BAUER, R. E., HALL, H. E., & WOODWARD, T. E. (1950.) **Use of chloramphenicol (chloromycetin) in experimental and human tularemia.**—*J. Amer. med. Ass.* **143.** 7-11. [Authors' conclusions copied *verbatim*.] **3234**

Results obtained in 6 cases of tularemia treated with chloramphenicol (chloromycetin) indicate that the antibiotic is an effective agent against the disease. In experimental mouse infections the results were not nearly so striking.

DE LAVERGNE, V., HELLUY, J. R., & FAIVRE, G. (1949.) Contribution à l'étude morphologique et biologique de *Clostridium tetani* (Cl. t.). [**Morphology and biology of** *Clostridium tetani*.]—*Rev. Immunol. Therap. antimicrob.* **13.** 315-324. **3235**

The authors report a frequency of 64% and 50% respectively of *Cl. tetani* in two series of soil examinations in the Meurthe-et-Moselle Département, in which there is also a high incidence of tetanus in human beings. The authors have studied the morphological, tinctorial and colonial characteristics of 21 strains of *Cl. tetani* from wounds in tetanus cases. They stress the difficulty involved in recovering the organism in a pure state owing to the concomitant presence in wounds of other sporulating anaerobes. After preparation of pure cultures, the toxigenicity of the strains was determined using 11-day cultures in Ramon's medium. Toxigenic activity was tested by injection of 1 ml. of serial dilutions of toxin into g.pigs weighing 350-500 g. Three strains produced a toxin active at 1 : 10,000, 12 strains at 1 : 1,000 and 6 strains at 1: 500. No strains were encountered which were of low toxigenicity or atoxigenic, perhaps because the capacity of the organism to produce tetanus in a g. pig was used as a criterion in the identification of the organism. No correlation was found between the toxigenicity of the different strains and the clinical outcome of the disease in the patients from which they were derived. The authors produce evidence suggesting that strains derived from cases having a fatal outcome possess a greater capacity for local multiplication of the organism in the tissues.

—H. PLATT.

STEIN, J. (1949.) [**A note on the diagnosis of blackquarter.**]—*Refuah vet.* **6.** 98-101. [Abst. from English summary p. 117.] **3236**

A statement that S. used a method of adding $CaCl_2$ to material from tissue to be tested on animals for blackleg infection.

BLAXLAND, J. D., & FINCHAM, I. H. (1950.) **Mycosis of the crop (moniliasis) in poultry, with particular reference to serious mortality occurring in young turkeys.**—*Brit. vet. J.* **106.** 221-231. [Authors' summary slightly amended.] **3237**

Five outbreaks of moniliasis are reported in which serious mortality occurred among young turkeys. *Candida albicans* was isolated from dead turkeys on five farms. The symptoms, post-mortem findings and diagnosis of the disease are described. The history and course of the disease in four of the outbreaks tended to confirm the opinion of other workers that moniliasis does not occur solely from the presence of *C. albicans* in the crop, but as a result of combination with other environmental factors.

A preliminary survey of specimens sent for routine post-mortem examination was carried out. 55 turkeys and 63 fowls were examined. *C. albicans* was isolated from 14 turkeys and 9 fowls, all of which had been suffering from some other pathological condition.

A method of isolation and preliminary typing of *C. albicans* is described.

CARSON, L. E., & CAMPBELL, C. C. (1950.) **The inhibitory effect of three antihistaminic compounds on the growth of fungi pathogenic for man.**—*Science.* **111.** 689-691. **3238**

Several cases of tinea pedis were found to respond to applications of a cream containing 2% pyribenzamine (N,N-dimethyl-N'-benzyl-N'-(α-pyridyl)-ethylenediamine monohydrochloride). Therefore this and two other antihistaminic compounds, *viz* antistine (2- N-benzyl-N-phenyl-aminoethyl-imidazoline hydrochloride) and diphenyl pyraline (1-methyl-piperidyl-4-benzhydryl ether) were studied to find if they had fungistatic or fungicidal properties.

Species of pathogenic fungi, including four strains of *Microsporum*, eight of *Trichophyton* and seven of *Epidermophyton floccosum*, were grown on artificial media. The fungicidal properties of three antihistaminic compounds were determined at different pH and in the presence or absence of horse serum. Although all three drugs had an inhibitory effect on most strains in the absence of serum, antistine failed to inhibit growth when serum was incorporated in the medium. It is suggested that the other two drugs, pyribenzamine and diphenyl pyraline, should be tested for their effectiveness *in vivo*.—E. EDEN.

WILKINS, J. H. (1950.) **Leptospirosis in war dogs in the United Kingdom.**—*J.R. Army vet. Cps.* **21.** 24-27. **3239**

W. described a survey of the incidence of agglutinins to *L. canicola* and *L. icterohaemorrhagiae* among 80 war dogs in Great Britain and gave brief case histories of three dogs with acute leptospirosis. Agglutinins to either *L. canicola* or *L. icterohaemorrhagiae* were absent from 54 (67·5%) of the dogs. Agglutinins to both were present in 13 (16·25%). They were present to *L. canicola* only in 11 (13·75%) and to *L. icterohaemorrhagiae* only in 2 (2·5%). —H. PLATT.

SCHINDLER, R. (1949.) Untersuchungen über die Leptospirose des Hundes. [**Canine leptospira infection research.**]—*Dtsch. tierärztl. Wschr.* **56.** 241-245. **3240**

In the winter of 1948-49 canine leptospirosis caused by *L. canicola* was widespread in Göttingen and 28 cases were diagnosed in the clinic of the Veterinary Institute during this period by serological methods. In five animals the organisms were demonstrated in urine.

Increased red cell sedimentation was found to be an early and constant feature of the acute and chronic disease, but not of the latent period of infection. Penicillin was used with success in eight of twelve acute cases. Blood transfusion was employed to relieve dehydration in five of the animals which responded to penicillin.

S. discussed the merits of a variety of methods claimed to be of value in diagnosis and concluded that the only certain methods are serological tests or demonstration of the causal organism.—E. G. WHITE.

KRESTOVNIKOVA, V. A. (1947.) [**Soviet research on bacteriophage therapy and prophylaxis of bacterial infections.**]—*Zh. Mikrobiol., Moscow.* No. **11**, pp. 56-65. **3241**

It is stated that sulphonamides and antibiotics take second place in Russian medicine to bacteriophages. The preference given to polyvalent bacteriophages is explained by their not being liable either to cause a relapse in patients or to sensitize bacteria, as may happen after a serum injection alone. However, their bacteriolytic action does not go beyond dissolving the bacterial cells, leaving the residual toxins intact; these have to be countered by a subsequent use of serum, optimum time having been found to be three hours later.

During the second world war combined anaerobic-staphylococcic-streptococcic phages with novocaine were used to combat gangrene. Some details are given of a trial in 11,000 wound cases along with controls in which other specifics were used.—F.A.A.

See also absts. **3273** and **3274** (anti-tetanic immunity); **3276** (staphylococcal antitoxin); **3277** (bubonic and pneumonic plague); **3333** (swine erysipelas); **3348** (fowl cholera); **3381** (*Salmonella* paratyphoid in a calf); **3413** (acid-fast bacilli); **3429** and **3430** (reports, Scotland); **3432** (report, Mozambique); **3433** (book, brucellosis); **3435** (book, bacteriology and serology).

DISEASES CAUSED BY PROTOZOAN PARASITES

BAKER, J. R. (1948.) **The status of the protozoa.**—*Nature, Lond.* **161.** 548-551; 587-589. **3242**

B. defines a cell as a mass of protoplasm bound by a membrane and containing within it a single nucleus formed by the telophase transformation of a haploid or a diploid set of anaphase chromosomes. Hence some protozoa (*e.g.* Radiolaria and Ciliophora) fall outside the definition given above.

It is suggested that there is no fundamental difference between the cleavage of an egg and the multiplication of a unicellular protozoan by division. The metazoa may have arisen by a failure of separation after this type of division. The effect of the different methods of feeding between unicellular plants and animals on evolutionary tendencies are also discussed. —E. EDEN.

HOARE, C. A. (1947.) **Tsetse-borne trypanosomiases outside their natural boundaries.**—*Soc. Belge Méd. Trop., Brussels.* Dec. 267-277. [Abst. in *Trop. Dis. Bull.* **45.** 504-505 (1948), copied *verbatim*. Signed: J. F. CORSON.] **3243**

It has been shown experimentally that pathogenic trypanosomes of man and animals in Africa which are cyclically transmitted by tsetse flies can also be conveyed mechanically by other biting flies, particularly tabanids, when the time between two successive bites is very short; there is little doubt that this occurs in herds of animals in tsetse-free areas of Africa though, as these are situated near to tsetse-infested areas, the long establishment of infection by mechanical transmission alone is difficult to prove. In countries far from Africa, however, such as Mauritius, the West Indies, Central America and South America, where no tsetse flies exist and where infection with *Trypanosoma vivax* among domestic animals has become a serious problem, it must be concluded that the disease is spread by mechanical transmission by biting flies. Other tsetse-

borne pathogenic trypanosomes, imported into tsetse-free areas, have caused outbreaks of disease in animals, but the infections have not become established there.

These facts arouse interest in the question of the relationship of *T. brucei* to *T. evansi*; the latter is monomorphic and indistinguishable in appearance from the long, thin forms of *T. brucei*, but some strains of *T. evansi* show polymorphism and even posterior-nuclear forms, yet in experiments they failed to infect tsetse flies. Laboratory strains of *T. brucei* maintained by syringe-passage, eventually become monomorphic, the long, thin forms alone persisting, and lose their power of developing in tsetse flies. It was found also that strains of *T. vivax* in tsetse-free countries (Ruanda and Martinique) could not develop in tsetse flies. It is suggested, therefore, that *T. evansi* has arisen from *T. brucei*; camels may have been infected with *T. brucei* during visits to tsetse-infested areas and on their return to the Sudan the infection was spread mechanically by tabanids, became established and was carried in caravans to Asia and elsewhere. An alternative suggestion that *T. brucei* was originally *T. evansi* cannot be excluded.

RAFALOVICH, E. M. (1949.) [**Agglutination reaction for diagnosis of latent "surra" (trypanosomiasis).**]—*Veterinariya, Moscow.* **26.** No. 6. pp. 41-43. **3244**

R. found the agglutination reaction to be the only method of diagnosis applicable to all species of domestic animals. Its specificity was proved by tests on rats. The antigen was prepared from trypanosomes washed in 15% fromalin diluted 1 : 10, and 2 ml. each were tested against sera of donkeys, sheep and a dog, diluted 1 : 10, 1 : 20, 1 : 50, 1 : 100 and 1 : 200. The results are set out in two tables. Rapid slide agglutination tests were made on 1,541 open range animals (horses, donkeys, camels). Only nine camels revealed trypanosomes. These, together with a further 91 camels, 56 horses and 9 donkeys which had clinical signs of trypanosomiasis (emaciation), were subjected to agglutination tests and 13 horses, 45 camels and 5 donkeys reacted positively.—F.A.A.

DE JESUS, Z., CABRERA, D. J., & GONZALES, F. Z. (1949.) **Studies on the control of surra: I. An effective and economical method of curative treatment of equine surra.**—*Natural appl. Sci. Bull.* **9.** 253-272. **3245**

An effective and economical method of curative treatment of surra in horses was developed. It consisted of intravenous injections of only one full therapeutic dose of naganol (suramin) at the rate of 1 g. per 200 lb. body weight in 10% aqueous solution for the initial treatment and followed a week later by a series of half doses of tartar emetic (0·5 g. per 400 lb. body weight) in 2% solution in normal saline at intervals of 3-4 days for a period from 3·5-6 weeks. The complete treatment covered a period ranging from 4·5-7 weeks. Three cases of natural surra infection and two cases of experimental infection, involving one Philippine pony, two grade Arabian and two Mongolian horses, were completely cured with no relapse even in those cases harbouring *Strongylus* spp. In this method of treatment, it appears that naganol simply serves to sensitize the *Trypanosoma evansi* to phagocytosis and possibly also serves to make the parasites more permeable to tartar emetic which is quite uniformly maintained at a low level of trypanocidal strength in the blood, thus precluding the attendant toxic effects of these two drugs on the hosts frequently observed hitherto in other methods.

SAUTTER, J. H., & POMEROY, B. S. (1950.) **Chemotherapy of experimental histomoniasis (enterohepatitis) of turkeys.**—*J. Amer. vet. med. Ass.* **116.** 436-439. Discussion pp. 438-439. **3246**

Enterohepatitis was induced experimentally in turkeys by rectal injections of histomonids obtained from infected livers. The curative effect of several drugs (tryparsamide, stovarsal sulphamethazine, sulphaquinoxaline) and other preparations (iodine, sodium fluoride, vitamins) were tried. On the whole the results obtained were very variable. None of the compounds tested were effective once infection reached the liver, but the arsenicals had a retarding effect on the penetration of the organisms into the body.—E. EDEN.

GREENBERG, J., TREMBLEY, H. L., & COATNEY, G. R. (1950.) **Effects of drugs on *Plasmodium gallinaceum* infections produced by decreasing concentrations of a sporozoite inoculum.**—*Amer. J. Hyg.* **51.** 194-199. [Authors' summary copied *verbatim*.] **3247**

Treatment of chicks inoculated with numbers of sporozoites of *Plasmodium gallinaceum* ranging from 1·0 to 0·01 mosquito equivalents was begun on the first day of detectable parasitemia and continued for 14 days. Ninety per cent. or more of the untreated chicks died of overwhelming exoerythrocytic infections. Pamaquine failed to prevent the death of any chicks inoculated with 1·0 mosquito equivalent, but was highly effective in this respect against infections of 0·01 mosquito equivalent. Against the latter infection, pentaquine, chlorguanide

and sulfadiazine increased the survival rate of the chicks significantly, whereas quinine and quinacrine were without effect. Results with chloroquine were inconclusive. In no case was the infection eradicated, since all survivors had chronic infections.

MEYNARD, J. A. A. (1950.) Piroplasmose équine, en Gironde. [**Equine piroplasmosis in the Gironde district, France.**]—*Rec. Méd. vét.* **126.** 264-267. **3248**

The report records, apparently for the first time, the existence of equine piroplasmosis in the Gironde district of France. Chemotherapy using lomidine, a derivative of 4,4′-diamidinodiphenoxy pentane, which has given good results in piroplasmosis in the dog, was effective. —D. LUKE.

See also abstr. **3352** (trypanosomiasis); **3429** and **3430** (reports, Scotland); **3432** (report, Mozambique); **3437** (book, parasitology).

DISEASES CAUSED BY VIRUSES AND RICKETTSIA

ALLENSPACH, V. (1950.) Die Maul- und Klauenseuche im Zoologischen Garten Zürich. [**Foot and mouth disease in the zoological gardens of Zürich.**] *Schweiz. Arch. Tierheilk.* **92.** 42-47. **3249**

Twenty-eight mammals died or were slaughtered. Symptoms are given. The source of infection was not discovered.—ROY MACK.

KIRK, R., HASEEB, M. A., & DAVIS, A. T. (1950.) **Attempts to cultivate rabies in a cell-free medium.**—*J. trop. Med.* (*Hyg.*) **53.** 167-170. [Authors' summary and conclusions slightly modified.] **3250**

In attempts to cultivate the infective agent of rabies in a cell-free medium by the methods described by Veeraraghavan [see *V.B.* **19.** 397; & **20.** 79] the authors failed to demonstrate any multiplication of the virus by using intracerebral titrations in mice for the estimation of virus titres before and after cultivation for twenty-four hours.

COX, H. R. (1949.) **Review of chick-embryo adapted living rabies virus vaccines, with primary emphasis on use in dogs.**—*Proc. 53rd Meet. U.S. Live Stk. sanit. Ass. 1949.* pp. 8-16 **3251**

The defects of existing killed vaccines, namely short duration of immunity necessitating annual revaccination, post vaccinal paralytic accidents and high cost are discussed. Work done with the chick-embryo adapted Flury strain of the virus is then described. This strain was originally isolated from the spinal cord of a child who died of rabies and was first serially passaged in the brains of one-day-old chicks and then on the chick embryo.

Preliminary experiments with rabbits and g. pigs gave encouraging results. The safety of the chick-embryo adapted virus for dogs was tested on 220 dogs which were kept under observation for at least eight months following subcutaneous and intramuscular injection of from 5 ml. upwards of a 20% suspension of infected chick-embryo tissues. None of these dogs showed any ill effects during the period of observation.

The immunizing value of this strain of virus was then tested. Vaccinated dogs were inoculated, after intervals varying from 3 to 27 weeks, by injection into the masseter muscle of a 10% suspension of canine salivary glands infected with a virulent street strain. Of 76 vaccinated dogs only two died following challenge while 32 of 46 controls died.

Field trials have also been made in three areas on dogs, cattle and goats with very good results. The duration of immunity in dogs is now being studied.—M.C.

KOPROWSKI, H., & BLACK, J. (1950.) **Studies on chick-embryo adapted rabies virus. II. Pathogenicity for dogs and use of egg-adapted strains for vaccination purposes.**—*J. Immunol.* **64.** 185-196. [Authors' summary copied *verbatim*.] **3252**

The pathogenic properties of three egg-adapted strains of rabies virus (NYC, NIH and Flury) were studied in dogs. Administered intraneurally the NYC and NIH strains were more virulent than the Flury strain. The Flury strain was completely innocuous to dogs when inoculated either into the masseter or the thigh muscles.

Vaccination of 76 dogs by the intramuscular route with preparations of the Flury strain of living rabies virus at egg-passage levels indicated excellent immunogenic properties of the strain as judged by the results of challenge with street strains of rabies virus. The Flury strain was immunologically superior to the two other egg-adapted strains, also employed in the living stage for vaccination purposes.

These findings are discussed in the light of possible use of the egg-adapted Flury strain living rabies virus for mass vaccination of the canine population.

LIPTON, M. M., & FREUND, J. (1950.) **The formation of complement fixing and neutralizing antibodies after the injection**

of inactivated rabies virus with adjuvants.—*J. Immunol.* **64.** 297-303. [Authors' conclusions copied *verbatim*.] **3253**

Infection or the use of active virus is not necessary for the abundant production of complement fixing and neutralizing antibodies against rabies virus. When rabbits or guinea pigs receive a single injection of rabbit brain containing inactivated rabies virus emulsified in paraffin oil, and one month later a few injections of plain vaccine, complement fixing antibodies in high titers are produced. The titers in rabbits are particularly high, up to 1 : 1280. When killed mycobacteria are added to the emulsion at the time of the first injection of guinea pigs, the majority of the animals die of allergic encephalitis and complement fixing antibodies are produced both to the virus and to mouse brain.

Under the experimental conditions used, there is a numerical relationship between the complement fixing and neutralizing antibody titers.

Benenson, A. S. (1950.) **Immediate (so-called "immune") reaction to smallpox vaccination.**—*J. Amer. med. Ass.* **143.** 1238-1240. [Author's conclusions copied *verbatim*.] **3254**

The "immune" reaction which develops in persons revaccinated with smallpox vaccine is an allergic reaction to vaccinal antigens and is not related to the infectivity of the vaccine applied. The use of the term "immune reaction" and "reaction of immunity" should be discontinued and "immediate reaction" used to describe the vaccination which achieves its maximum within seventy-two hours.

Heat-inactivated smallpox vaccine can produce in revaccinated persons reactions that are morphologically indistinguishable from the so-called "immune" reactions following insertion of potent vaccine. Reactions have been observed to range from a simple papule to one in which the papule is replaced by vesiculation and pustulation, surrounded by a zone of erythema.

An immediate reaction to smallpox vaccination indicates previous contact with the virus and probably residual immunity adequate for the usual exposures of American living. However, in the face of exposure to virulent variola strains the immediate reaction can be accepted as indicating immunity only if the vaccine used is known to be of high potency and has been applied by the proper vaccinating technic.

Hilleman, M. R., Mason, R. P., & Rogers, N. G. (1950.) **Laboratory studies on the 1950 outbreak of influenza.**—*Publ. Hlth. Rep., Wash.* **65.** 771-777. [Authors' summary copied *verbatim*.] **3255**

The results of hemagglutination-inhibition and protective tests indicated that a number of strains of influenza A virus recovered in 1950 differed antigenically from those isolated in previous years. The changing antigenic structure of strains of influenza virus affecting man appears to progress slowly but steadily. Over a number of years, the divergence is sufficient so that the earlier isolated strains elicit few protective antibodies against the newly isolated ones.

Eklund, C. M., Brennan, J. M., & Bell, J. F. (1950.) **Final report of the Pan-American Sanitary Bureau regarding the 1948-49 outbreak of Eastern equine encephalitis in the Dominican Republic.**—*Bol. Ofic. sanit. panamericana.* **29.** 493-507. [In English. English and Spanish summaries. English summary copied *verbatim*.] **3256**

The outbreak of disease due to the Eastern equine virus among human beings and equines in the Province of Monti Cristi and among equines in the Samana Province of the Dominican Republic presents the features noted in the other outbreaks of this disease. The epidemiological evidence in the Monti Cristi outbreak points to some ecological set-up associated with proximity to a seacoast as important in the origin and dissemination of the disease. Salt marsh mosquitoes appear to fit into this ecological complex. Mosquito control measures appear to be the most suitable to check an outbreak among human beings.

Razza, F., & Carusillo, G. (1949.) L'Encefalomyelite equina. La malattia di Borna in Breviglieri ed altri villaggi limitrofi. [**Borna disease in Tripoli.**]—*Riv. Med. Vet. Zootec.* **1.** 329-348. [English summary slightly modified.] **3257**

There are many varied forms of encephalomyelitis and their specific diagnosis depends on the species of ectoparasite carrying the disease, on the cultivability of the virus in living tissues and on its transmissibility to laboratory animals.

One form of encephalomyelitis is represented by Borna disease which is characterised by inclusion bodies in the nervous cells of the hippocampus, known as *Joest-Degan* bodies, and by the transmission of the virus to laboratory animals which die after a variable incubation period of between thirty and sixty days.

With regard to prophylaxis against Borna disease, experiments have been carried out with a vaccine made from a suspension of the brains of infected horses and phenol. The result was

more than satisfactory although it would have been more desirable to have employed a living avirulent vaccine instead of a dead one as is usual against diseases caused by a filtrable virus.

The power of resistance conferred on the animals was such that in the badly affected village of Breviglieri the disease was brought under control in a way manifested by the chronic rather than lethal aspect the disease took on.

Abortive forms were also demonstrated which bore witness to the immune state conferred by the vaccine. At any rate the success of the fight against the disease, besides being helped by the use of vaccine, can also be explained as largely due to the employment of other measures of hygiene and sanitation, the isolation of animals and prompt disinfection of premises.

SOUTHALL, J., & RAZZA, F. (1950.) **An outbreak of Borna disease in Tripolitania.**—*Vet. Rec.* **62.** 4-5. **3258**

The history of the outbreak, the course and symptomatology of the paralytic and furious forms, and diagnosis are given. Vaccination and other control measures are described. —ROY MACK.

GZHITSKI, S. Z. (1949.) [**Changes in the blood of horses during encephalomyelitis.**]—*Veterinariya, Moscow.* **26.** No. 6. pp. 39-41. **3259**

In equine encephalomyelitis, disorganization of the liver causes hyperglycaemia, lowering of the alkali reserve, increases in nitrogen and free ammonia in the blood. G. suggests that an increase in sugar content is not necessarily a characteristic of this disease but may be explained by the functions of the liver being upset. Altogether, the blood changes may be the cause of the initial brain inflammation and, hence, the liver be the initiator of the illness. Insulin-sugar therapy is recommended. There is a table showing ten cases with results of quantitative analyses of the blood and of van der Berg's tests.—F.A.A.

REAGAN, R. L., LILLIE, M. G., HICKMAN, J. W., & BRUECKNER, A. L. (1950.) **Studies of the virus of equine infectious anemia.**—*Amer. J. vet. Res.* **11.** 157-158. **3260**

The authors describe electron microscopic studies on the serum of a horse injected with lyophilized serum from a spontaneous case of equine infectious anaemia. The body temperature reached 103·8°F. on the 13th day post-injection and 106°F. on the 16th day. The animal was bled on the 14th and 16th days. The serum was passed through a Seitz filter and stored at —60°C. On injection into a horse it produced typical symptoms of infectious anaemia. On electron microscopy, preparations of this serum revealed bodies of varying size, usually round in shape, sometimes with indistinct outline, measuring 11-59 mμ. (mean 30mμ). Serum from normal control horses showed none of these bodies. Reference is made to determinations, made by other workers using collodion membranes, of the particle size of E.I.A. virus which gave values of 18-50mμ. The authors also report the establishment of the virus in rabbits through 20 passages by intravenous injection of blood. The rabbits had temperature rises lasting 1-7 days, or recurrent high temperatures or no temperature rise at all. Third serial passage rabbit virus injected into a horse produced a chronic form of disease with intermittent pyrexia similar to that found in E.I.A.—H. PLATT.

O'FARRELL, J. D. (1950.) **Malignant catarrh of the bovine.** (Correspondence.)—*Irish vet. J.* **4.** 20. **3261**

The characteristic symptoms of bovine malignant catarrh are described. The disease is said to be not uncommon in parts of Ireland. The author claims to have successfully treated this disease with intramuscular injections of vitamin B_1 at a concentration of 100 mg. per ml. using 300 mg. followed by 100 mg. daily for three days.—E. EDEN.

GOOR, S. (1949.) **Bovine malignant catarrhal fever in Palestine.**—*Refuah Vet.* **6.** 63-65. [Abst. from English summary (p. 78).] **3262**

Bovine malignant catarrh has been known to occur in Palestine for many years. In the autumn of 1943, clinical diagnosis of the disease was confirmed for the first time by histological examination in the Government Veterinary Laboratory, Tel Aviv. It was in that year that the disease was made notifiable. Since then 26 cases, all sporadic in character, have been diagnosed. Nineteen [? 20], or 76% of the affected animals died or had to be slaughtered, one recovered and no results are known about the remaining five cases.—D. S. RABAGLIATI.

RODERICK, L. M. (1949.) **"X" disease hyperkeratosis of cattle.**—*Fed. Vet.* **6.** 7-8. **3263**

This relatively new disease occurs only in cattle, affecting young animals more readily especially during late winter and early spring. The exact cause of the disease is not known, suggestions that D.D.T. is incriminated are without foundation. Treatment with various drugs and vitamins has failed to give consistent improvement.—E. EDEN.

COLE, C. G., DALE, C. N., & HENLEY, R. R. (1949.) **Hog cholera.**—*Fmrs' Bull. U.S. Dep. Agric.* No. 834. pp. 28. **3264**

A very informative pamphlet on swine fever designed for American farmers. Methods of immunization and serum treatment are included.—ROY MACK.

VERLINDE, J. D., & BOER, H. D. (1948.) **Animal experiments on infectious hepatitis.**—*Arch. ges. Virusforsch.* **4.** 1-23. [In English.] **3265**

The transmission of infective hepatitis to g. pigs was successful in some experiments. Fever, fatty degeneration and necrosis of the liver and swelling of the capillary endothelium were observed. During the period of fever, the virus could be demonstrated in the blood and other organs. Mice and rats did not react to the inoculation with clinical symptoms, but the virus could be recovered from the liver. In later experiments, difficulties were experienced in the transmission to g. pigs; it is considered that the previous success might have been due to a low nutritional status of the experimental animals.—E. EDEN.

BEAUDETTE, F. R. (1949.) **Twenty years of progress in immunization against virus diseases of birds.**—*J. Amer. vet. med. Ass.* **115.** 232-244; 367-377. **3266**

The virus diseases included in this paper are fowl pox, laryngotracheitis, infectious bronchitis, Newcastle disease, equine encephalomyelitis, avian encephalomyelitis and infectious sinusitis of turkeys, with a brief reference to psittacosis.

References to authors and year of publication are made in the text and no reference to journals of publication is made at the end.

The efforts in producing immunity against these diseases are discussed in some detail mentioning the earlier workers and their results and also the modern methods available. The desirability of multiple simultaneous vaccination against such conditions as fowl pox, laryngotracheitis, Newcastle disease and infectious bronchitis is discussed, and the effectiveness in virus disease control of the modern products, wisely used and administered, is mentioned.—F. W. JORDAN.

WENNER, H. A., MONLEY, A., & TODD, R. N. (1950.) **Studies on complement fixation with Newcastle disease virus.** *J. Immunol.* **64.** 323-333. [Authors' summary copied *verbatim.*] **3267**

A complement-fixing antigen appeared in allantoic fluid of chick embryos infected with Newcastle disease virus. There was a concomitant increase in complement-fixing and hemagglutinating activity, and in infectivity titer in the extra-embryonic fluids of the infected chick embryos.

Evidence has been recorded to the effect that Newcastle disease virus placed in the thalamic area of *rhesus* monkeys produced encephalitis. Serologically distinct antibodies, as measured by the complement-fixation and hemagglutinin-inhibition reactions, appeared in the serum of monkeys during convalescence.

WENNER, H. A., MONLEY, A., & TODD, R. N. (1950.) **Studies on Newcastle disease virus encephalitis in Rhesus monkeys.**—*J. Immunol.* **64.** 305-321. [Authors' summary copied *verbatim.*] **3268**

Newcastle disease virus provoked encephalitis in *rhesus* monkeys following intracerebral inoculation. The histopathologic changes in monkeys consisted of a chorio-meningo-encephalitis. A comparative study of two strains of NDV indicated a fundamental similarity in the ability of each to cause encephalitis with corresponding histological changes in the brain. One strain of the virus has been transferred by brain-to-brain passage in *rhesus* monkeys. There was no evidence of infection following intradermal, intranasal, or intraneural inoculation of virus.

GRUMBLES, L. C., & BONEY, W. A., JR. (1950.) **Observations on the etiology and treatment of infectious sinusitis of turkeys.**—*N. Amer. Vet.* **31.** 523-529. [Authors' summary copied *verbatim.*] **3269**

Five strains of a nonbacterial agent, probably a virus, were isolated from field cases of infectious sinusitis in turkeys. This material was propagated in chick embryos and produced an irregular, scattered embryo mortality occurring between the third and 13th days after inoculation.

The disease was easily transmitted to turkeys by contact exposure or by the inoculation of bacteria-free, egg-propagated or field material into the infraorbital sinus. The disease was transmitted to chickens and produced a mild, chronic nasal discharge.

Four hundred and eight birds were treated in four field outbreaks with varying dosages of streptomycin. When examined seven to 14 days after treatment, 231 birds were classified as complete recovery, 109 as marked improvement and 68 as no apparent improvement. Thirty-nine birds which failed to respond to the first treatment were given a second injection of streptomycin with the following results: complete recovery, 20; marked improvement, 6; no apparent improvement, 13.

Thirty-one field cases were treated with aureomycin, with the result that 17 were classified as complete recovery, 11 marked improvement and 3 no apparent improvement.

The results of this study indicate that both streptomycin and aureomycin are effective against the causative agent of infectious sinusitis and offer considerable promise as a rapidly and easily administered treatment for this condition.

SOMAN, D. W. (1950.) **The incidence and distribution of murine typhus amongst Bombay rats.** *Indian med. Gaz.* **85.** 249-253. [Author's summary copied *verbatim.*] **3270**

The incidence and distribution of murine typhus in field and domesticated rodents in Bombay were assessed by complement fixation test.

Evidence of previous infection was obtained in 24·22 per cent. of 739 rats examined on the whole. The distribution among different species was calculated: *R. norvegicus* showed an incidence of 45 per cent., *Rattus rattus* 19·2 per cent. and *Gunomys kok* only 6·2 per cent. The small number of shrews examined showed no evidence of previous infection.

Rickettsial infection amongst the rodents in Bombay was further confirmed by the isolation of two strains. Cross immunity and complement fixation tests conclusively proved that the strains were of murine origin.

The longest survival period of murine virus as obtained in an experimentally infected laboratory-bred rat was 522 days, proving the efficacy of the rodent reservoir in the maintenance and propagation of virus in nature from year to year.

O'CONNOR, J. L., & MACDONALD, J. M. (1950.) **Excretion of specific antigen in the urine in tsutsugamushi disease (scrub typhus).** —*Brit. J. exp. Path.* **31.** 51-64. [Authors' summary copied *verbatim.*] **3271**

A method for the estimation of rickettsial antigen in the urine of scrub typhus patients has been described. The detection of this antigen allows a laboratory diagnosis of the infection to be made in the first day of the disease. The significance of the excretion of antigen is briefly discussed.

DEUTSCH, D. L., & PETERSON, E. T. (1950.) **Q fever: transmission from one human being to others.**—*J. Amer. med. Ass.* **143.** 348-350. [Authors' summary copied *verbatim.*] **3272**

A case of Q fever with apparent transmission of the disease to 3 other persons is reported. The mode of transmission was not determined.

See also absts. **3193** (mastitis and F. & M. disease); **3241** (bacteriophage); **3332** (swine fever); **3429** and **3430** (reports, Scotland); **3432** (report, Mozambique); **3436** (book, virus diseases).

IMMUNITY

LEMÉTAYER, E., NICOL, L., GIRARD, O., CORVAZIER, R., & CHEYROUX, M. (1950.) Production des antitoxines chez les sujets de l'espèce bovine. Valeur antitoxique du lait. [**Antitoxin production in cattle and antitoxic value of their milk.**]—*C. R. Soc. Biol. Paris.* **144.** 219-222. **3273**

The natural anti-tetanic immunity in bovines ensures that inoculation results in a "secondary" type of response, although this effect is not so marked as in the horse. Cattle enjoy no natural anti-diphtheritic immunity and therefore inoculation of diphtheria antigen is followed by a primary type of response. The elimination of antitoxin in the milk depends upon the serum titre.—G. FULTON ROBERTS.

LEMÉTAYER, E., NICOL, L., GIRARD, O., CORVAZIER, R., & CHEYROUX, M. (1950.) Recherches sur le passage par la voie digestive des antitoxines de laits hétérologues. [**Absorption through the digestive tract of heterologous antitoxins from milk.**]—*C. R. Soc. Biol. Paris.* **144.** 217-219. **3274**

Three foals, aged 8 days, 18 days and 8 weeks, were given half a litre of cow's milk daily for six days. The serum of the cow supplying the milk contained half a unit of natural tetanus antitoxin per cu. mm. No rise in the foals' serum titre of tetanus antitoxin was detected.

Similar experiments with three more foals using milk containing very large quantities of antitoxin were also negative.

—G. FULTON ROBERTS.

WOLFE, H. R., NORTON, S., SPRINGER, E., GOODMAN, M., & HERRICK, C. A. (1950.) **Precipitin production in chickens. V. The effect of splenectomy on antibody formation.**—*J. Immunol.* **64.** 179-184. [Authors' summary copied *verbatim.*] **3275**

Splenectomy reduces the ability of chickens to produce precipitating antibodies. Splenectomized chickens are less responsive to small injections of antigen than unoperated animals.

MURRAY, J., CALMAN, R. M., & LEPINE, A. (1950.) **Transmission of staphylococcal**

antitoxin (anti-haemolysin) from mother to child.—*Lancet.* **259.** 14-16. [Authors' summary copied *verbatim.*] 3276

In 56 deliveries the concentration of staphylococcal anti-haemolysin was estimated in blood samples taken from the mother during labour, from the cut umbilical cord before expulsion of the placenta, and from the infant in the first day of life. The antitoxin levels were found to be higher in the cord blood and infant's blood than in the mother's blood in the great majority of cases. Theories of the transmission of antibodies from mother to fœtus must be capable of explaining this finding.

MEYER, K. F. (1950.) **Immunity in plague: a critical consideration of some recent studies.**—*J. Immunol.* **64.** 139-163. [Author's discussion and summary slightly amended.] 3277

From the vast and somewhat unmanageable array of facts, there may be derived certain principles and laws which govern the immunity in bubonic and pneumonic plague. Considering the mechanism from a diversity of angles, it is recognized that phagocytosis is the most important mechanism which animals and man use in guarding against and disposing of a plague infection. The mesenchymal tissue cells are responsible not only for cellular immunity, but for humoral defense as well. Their cytoplasm, modified by effective contact with antigen, develops adaptive enzymes and thus circulating antibodies—agglutinins and specific fraction I precipitins—which in turn remove the anti-phagocytic property of the slimy "envelope" of the plague bacillus. Cytologic and immunologic observations support this interpretation. The effectiveness of the mechanism and consequently the fate of the host are determined by the balance between the bacterial multiplication and the efficacy of the clearing mechanism. The following factors not clearly understood are suspected of impairing the orderly development of antibacterial immunity: (a) The endotoxins liberated by the disintegrating plague bacilli seriously poison the myocardium, adrenals and parenchymatous organs, and thus create vascular disturbances. (b) The soluble antigens set free, if excessive, block the action of the antibodies on the bacilli. (c) Genetic resistance of individual bacillary elements may permit escape from phagocytosis; slow multiplication of these resistant cells may be, in part, responsible for chronic plague accompanied by marasmus.

It is generally accepted that the efficacy of the humoral phase of the immunity mechanism is determined by the existing concentration of antibodies. This aspect deserves brief discussion. Current articles on plague convey the impression that the concentration of serum antibodies in man recovered from plague or in animals actively immunized with avirulent strains or antigens is too low to be detected by the usual agglutination or mouse-protection test (as developed by Jawetz and Meyer). Provided suitable strains have been selected for agglutination and improvements in the protection test made (Meyer and Foster, 1948), even low concentrations of antibodies are demonstrable. Antibodies in varying concentrations have been demonstrated in the serum of monkeys, guinea pigs, mice and man recovered from infection or injected with any one of a diversity of antigens or avirulent cultures. Furthermore, the persistence of specific serum antibodies in low concentrations for several months has been proved. However, the blood concentration of the antibody does not necessarily indicate the state of immunity against plague. The physiologic activity of the cellular factors is so important that the availability of the antibody in the plasma is probably subordinate to the antibodies on the cells in the regional lymph nodes. In the natural process of plague infection the defenses, as studied in the cytogram, come into play in the following order: tissue, lymphatic system, blood stream and finally the reticulo-endothelial system. During the progress of these reactions, although specific antibodies are not demonstrable in the blood plasma, the antigenic stimulus on the antibody-producing cells previously in contact with the different antigenic plague proteins will respond vigorously. Man, as well as animals, injected with plague vaccine or certain particulate antigens apparently possesses the ability to mobilize antibodies in the local inflammatory exudate and regional lymph nodes, provided their cells have been adequately impressed. It is indeed significant that the immunity afforded by a virulent infection is greater than that conferred by vaccination with different avirulent strains, which in turn is more permanent than that produced by plague prophylactics consisting of antigens. Whether an infection in an immune animal stimulates the physiologic activity of the histiocytes and their related cells to produce antibodies more rapidly and more effectively than the susceptible animal has not as yet been determined. It is not unlikely that the immune state is further conditioned by an increased phagocytic capacity of the microphages and macrophages. Scattered observations indicate that individual and seasonal species-resistance to plague depends on the physiologic activity

of the mesodermal tissues, not on any mysterious humoral lytic antibody.

CHEN, H. T. (1950.) **The *in vitro* action of rat immune serum on the larvae of *Taenia taeniaeformis*.**—*J. infect. Dis.* **86.** 205-213. [Author's conclusions slightly modified.] **3278**

A specific cysticercocidal property was generally found in immune serum from rats moderately infected (not too lightly or too heavily) with the larval form of *Taenia taeniaeformis*. It did not affect ova, but in *in vitro* hanging drop preparations, it collapsed and shrank the bladder of cysticerci and then in turn caused the extrusion of the bladder cells and death of the cysticerci. It was demonstrated 7 days after infection and as early as 4 days in one instance. It was less effective against old cysticerci. It largely withstood heating at 56°C. for one hour but not lyophilization. It usually acted more rapidly in inactivated serum samples to which complement was added in a final dilution of 1 : 30. It was present in serum samples from rats infected 6 months previously or in serum samples kept in the refrigerator 5½ months.

A somewhat similar property was found in fresh normal rat and guinea pig serum and in saline. The serum property was not stable at 56°C., was not restored by complement in dilutions of 1 : 30, and disappeared when serum samples were refrigerated a week or more.

The specific cysticercocidal property did not account for the protective or precipitin properties of immune serum but may be associated with the late immunity against *Cysticercus fasciolaris*, which was differentiated by Campbell (1938).

BRUNER, D. W. (1950.) **Laboratory diagnosis of hemolytic icterus in foals.**—*Cornell Vet.* **40.** 11-16. **3279**

An account of the techniques of agglutination and haemolysis for detecting iso-antibodies in mares' serum or milk. The techniques do not differ essentially from those normally used in blood grouping and in haemolytic tests. A 50% cell suspension is used in each case, and a serum dilution of 1 : 2 for agglutination and 1 : 10 for haemolysis; doubling dilutions are prepared if the test is positive.

A test between the foal's cells and the dam's serum at birth would indicate whether it is safe for the foal to be suckled by the dam. B. states that incomplete antibodies have not been demonstrated [but the methods employed for their detection are not mentioned]. The haemolysis titre bears an approximate relationship to the severity of the symptoms in the foal. The blood of an affected foal has an icteric tinge in the serum and a tendency to auto-agglutination of the cells.

The application of serological principles to the selection of blood donors for the foal or mates for sensitized mares is mentioned.

—G. FULTON ROBERTS.

KERSHAW, G. F. (1950.) **Notes on deaths in young piglets similar to the haemolytic disease in young foals.**—*Vet. Rec.* **62.** 383. **3280**

Attention is drawn to a syndrome of high sudden mortality among litters of piglets which were apparently healthy at birth. Death takes place after suckling and within 36 hours of birth. P.M. examination reveals no ususual feature.

It is suggested that this condition may be haemolytic disease of the new-born animal from iso-immunization of pregnancy, similar to the condition encountered in foals.

—G. FULTON ROBERTS.

CAZZULLO, C. L., & FERRARO, A. (1949.) **Isoallergic encephalomyelitis produced in guinea pigs.**—*Arch. Path.* **48.** 316-330. **3281**

Suspension of normal brain plus adjuvants produced this condition when 3 ml. were injected intramuscularly or 1 ml. intraperitoneally. Pathological changes were found in the entire nervous system and consisted of perivascular inflammatory reaction. Changes in the remaining organs were present, but are not described. An initial hypotonia and asthenia was often followed by ataxia, paresis, paralysis, tremors and convulsions.

—ROY MACK.

See also absts. **3206** (BCG); **3207** (tuberculin); **3211** (haemagglutination inhibition); **3230** (brucellosis); **3231** (strain 19); **3244** (agglutination in the diagnosis of surra); **3251** and **3252** (living rabies virus vaccine); **3253** (rabies); **3254** (smallpox); **3255** (influenza); **3257** and **3258** (Borna disease); **3266** (virus diseases in birds); **3267** (Newcastle disease); **3311** (immunity in new-born calves through colostrum); **3332** (live vaccines); **3333** (swine erysipelas antiserum); **3434** and **3435** (books).

PARASITES IN RELATION TO DISEASE [GENERAL]

CHRISTENSEN, N. O., & ROTH, H. (1949.) **Investigations on internal parasites of dogs.**—*K. VetHøjsk. Aarsskr.* 1949. pp. 1-73. [In English; abst. from authors' summary.] **3282**

The carcasses of 100 dogs from Copenhagen and environs were examined for internal parasites in October-December, 1945. No parasites were found in the urinary bladder,

liver, trachea, bronchi, lungs, heart, aorta or pulmonary artery. Parasites were present in the gastrointestinal tract of 53 dogs.

Toxocara canis was present in 27 dogs; *Toxascaris leonina* in 11; *Dipylidium caninum* in 6; *Taenia pisiformis* in 3; *Cryptocotyle lingua* in 17; *Cryptocotyle concava* in 2; *Mesorchis* (syn. *Stephanoprora*) *denticulatus* in 2.

Isospora rivolta was present in 4, and *Isospora bigemina* in 1 case.

The authors give details of parasites found in Danish dogs other than those in the above series. *Uncinaria stenocephala, Taenia hydatigena, Taenia cervi, Taenia krabbei,* and *Mesocestoides lineatus*; and *Pygidiopsis genata* (experimental infection) and *Alaria alata.*

There is discussion on the anatomy, taxonomy, geographical distribution, biology and pathology of the parasites.

Other internal parasites presumably occur in dogs in Denmark, e.g. *Trichuris vulpis, Taenia multiceps, Taenia serialis, Echinococcus granulosus* and *Diphyllobothrium latum.* From comparison of the results now recorded with those of Krabbe described in 1860-63, it may be surmised that the incidence of cestodes has decreased considerably, while nematode infestation is about the same. Krabbe did not record any trematodes or coccidia.

To ascertain the source of infection with *Cryptocotyle lingua* in Danish dogs, cats, silver foxes, and mink, raw fish feeding trials were made with dogs. Of five puppies, five months old, two were fed cod, the other three plaice, flounder and mackerel respectively and the two fed with cod became heavily infested. The cod, *Gadus callarias,* proved to be the most important intermediate host, encysted metacercariae of this fluke being seen in the skin of practically all codfish sold in Copenhagen. The puppies fed plaice (*Pleuronectes platessa*) and flounder (*Platichthys flesus*) yielded numerous specimens of *Cryptocotyle concava* and *Pygidiopsis genata,* but only a few *Cryptocotyle lingua.* Feeding with mackerel (*Scomber scombrus*) gave no results.

Toxascaris leonina, Mesocestoides lineatus, Mesorchis denticulatus, Pygidiopsis genata, and *Isospora bigemina* are parasites not previously recorded from Denmark. *Ancylostoma caninum, Cryptocotyle concava,* and *Alaria alata* have not been reported previously in dogs in Denmark.

The plaice and the flounder are new intermediate hosts of *Cryptocotyle lingua,* and the plaice is, moreover, a new intermediate host of *Pygidiopsis genata.*

PARASITES IN RELATION TO DISEASE [ARTHROPODS]

EDDY, G. W., & GRAHAM, C. H. (1949.) **Tests to control horn flies with new insecticides.**—*J. econ. Ent.* **42.** 265-268. **3283**

The authors used D.D.T., methoxychlor, the methoxy analogue of D.D.T., dichlordiphenyl dichlorethane, chlordane and toxaphene (chlorinated camphene) in concentrations of 0·5%; into each of these insecticides screen wire cages were dipped. 20 horn flies, *Siphona* (*Lyperosia*) *irritans,* placed in each cage, were knocked down in 5, 8, 17, 53 and 77 min. respectively. Two months after application methoxychlor was the only insecticide which had not lost any of its effectiveness. Under semi-field conditions batches of 100 flies were liberated on a sprayed cow in a cage; 0·5% D.D.T. caused a complete mortality of flies for two weeks while D.D.T. and toxaphene caused 78·5% and 80% mortality respectively even after three weeks. 1·5% D.D.T. gave the longest residual effect and wettable powders were at all times more satisfactory than emulsions.—M. J. LETHBRIDGE.

WHELLAN, J. A. (1949.) **A review of the tsetse fly situation of S. Rhodesia, 1948.** *Rhod. agric. J.* **46.** 316-325. **3284**

W. reports that the control of tsetse fly in the various districts of S. Rhodesia remained satisfactory during 1948 although two severe outbreaks of bovine trypanosomiasis occurred in the Chipinga District and in the Mkota Native Reserve (near the Mtoko District). The chief operations against tsetse in the Colony were the establishment and maintenance of barrier belts and forest clearings and the discriminate destruction of game. The number and species of game shot during the year is given and a short survey of tsetse fly operations in each District is presented.

—FERGUS S. MCCULLOUGH.

BUSHLAND, R. C., WELLS, R. W., & RADELEFF, R. D. (1948.) **Effect on livestock of sprays and dips containing new chlorinated insecticides.**—*J. econ. Ent.* **41.** 642-645. **3285**

The authors applied the chlorinated insecticides noted below as sprays or dips on cattle, sheep, goats, pigs and horses at 1·5% concentration, eight times at four day intervals. No apparent injury resulted from treatment with D.D.T., methoxychlor (2,2,bis(*p*-chlorphenyl)-1-1-dichlorethane, the methoxy analogue of

D.D.T.), commercial benzene hexachloride, dichlordiphenyldichlorethane or toxaphene (chlorinated camphene). Neurological symptoms and deaths occurred sporadically with chlordane and a 0·75% concentration of a wettable powder containing γ-benzene hexachloride.

—M. J. LETHBRIDGE.

KETTLE, D. S. (1949.) **The speed of action of insecticidal sprays and deposits and its use in assessing the biological efficiency of BHC, DDT and pyrethrum.**—*Bull. ent. Res.* **40.** 403-429. [Author's summary modified.] **3286**

The author standardized technique for the estimation of the speed of action of insecticidal sprays and deposits on adult houseflies (*Musca domestica*), as indicated by their speed of knock down, and applied the technique to the assessment of the biological efficiency of insecticidal solutions.

The speeds of action of both sprays and deposits are greatly affected by the duration and intensity of illumination to which the flies have been exposed before treatment and by the ratio of the sexes in the treated population. The first factor was eliminated by conditioning the flies to an intensity of illumination of 20 foot-candles overnight, i.e. at least 17 hours, and the second was minimised by estimating the median knock down time for 50c per cent. instead of 50 per cent. where $50c = 0{\cdot}67x + 0{\cdot}33y$ and x and y represent the percentages of males and females respectively in the treated population. This relationship appeared to be independent of the technique as it was the same for 0·05 per cent. gammexane in petroleum distillate used as a fly spray and for deposits of pure p.p. DDT put down from petroleum distillate. The experimental evidence, on which this correction is founded, is set out in full.

There was a separate straight line relationship between the percentage knock down in terms of probits and the time after spraying (or the time of exposure) in minutes for male and female *M. domestica*. Such a relationship, therefore, is not true for a population of mixed sexes. The method of calculating the corrected median knock down time ($K.D._{50^c}$) is detailed.

The speed of knock down of solutions of pyrethrins, the gamma isomer of BHC and the para para isomer of DDT were proportional to the concentration of the insecticide in the solution. This conclusion has been applied to the estimation of gammexane in solutions of unknown strength and examples are given in which the calculated and actual values are compared and some conception is obtained of the accuracy of the method.

Experiments with DDT deposits on aluminium plates showed that:—(a) The speed of action was independent of the deposit providing that this was above 2 mg. p.p. DDT/sq. ft. When, however, the deposit was applied to paper-covered panels the speed of action varied with the magnitude of the deposit. (b) A deposit of p.p. DDT from a solution of pure (100 per cent.) p.p. DDT acted more quickly than an equal p.p. DDT deposit from a solution of technical (80 per cent.) p.p. DDT. (c) The action of a deposit was more rapid when it was in a form which could act both as a stomach and contact poison and hence the ball milled technical DDT applied as a suspension acted more quickly than an equivalent deposit of technical DDT from petroleum distillate because the crystals of the latter were too tightly adherent to the panel for the flies to ingest them.

The significance of these results is discussed under the appropriate section.

BARBER, G. W. (1948.) **The lethal lines of the house fly.**—*J. econ. Ent.* **41.** 292-295. **3287**

B. isolated and perpetuated in the laboratory two lines of the house fly (*Musca domestica*) which have a low rate of emergence. The pupal cases of the "lethal" line were abnormally elongated while those of the "flat" line were rectangular, flattened and with very distinct segments. The rates of emergence from these pupae were only 1·8% and 40% respectively those of normal pupae.—M. J. LETHBRIDGE.

LEE, D. J. (1949.) **Sandfly breeding places.**—*Aust. J. Sci.* **12.** 74-75. **3288**

Plagues of sandflies (Ceratopogonidae) which cause considerable annoyance to man and animals in N.S.W. coastal regions of Australia are due chiefly to a hitherto undescribed species [not named]. *Culicoides molestus* is commonly present but is not the dominant species. The immature stages of the plague species were found in the zone inhabited by plants of the genus *Salicornia* lying between the mangroves and the land, only covered by the highest spring tides.—H. MCL. GORDON.

WHITNALL, A. B. M., & BRADFORD, B. (1949.) **An arsenic-resistant tick and its control with "Gammexane" dips. Part II.** *Bull. ent. Res.* **40.** 207-226. [Authors' summary copied *verbatim*.] **3289**

The rapid spread of the single host arsenic-resistant blue tick, *B. decoloratus*, a transmitter of piroplasmosis and anaplasmosis, seriously affected a large and important cattle ranching area in South Africa.

Biological tests, using the laboratory technique described [see *V.B.* **20**. 292], enabled the most effective "Gammexane" preparations to be rapidly selected from numbers of experimental dips. The technique was also employed as a supplement to chemical analyses of dip wash samples where only the total hexachlorocyclohexane and not gamma isomer was estimated. Twenty thousand adult female ticks were used in these *in vitro* tests. Oil emulsions seemed more active than dispersible powders or pastes, but all tests indicated that 50 parts per million "Gammexane" should satisfactorily control the tick in the field.

Laboratory tests with larvae of the blue tick showed that "Gammexane" had a persistent action and was very toxic to this stage of the tick. Excellent control of larval ticks could be anticipated in the field.

In vitro tests indicated that "Gammexane" was effective against the two- and three-host ticks, *R. evertsi*, *R. appendiculatus*, *A. hebraeum*, *H. silacea* and *Hyalomma* spp., but hand dressing and shorter dipping intervals might be necessary to control these ticks in the field. The sheep paralysis tick, *I. pilosus*, seemed to be resistant to "Gammexane" but was readily killed by arsenic.

Preliminary spraying tests indicated that "Gammexane" would not injure cattle, but had a rapid action on ticks and lice, and markedly reduced infestations of these ectoparasites.

Nine dipping tanks were filled with experimental "Gammexane" dips, and were kept under observation for fifteen months. Chemical analyses of dip wash samples indicated that there was a drop in the gamma isomer content as the number of cattle dipped increased. Biological tests with the same dip wash samples confirmed this. They also showed how normal replenishments increased the toxicity of the wash and maintained it at sufficient strength to control the single host blue tick in the field. Scrapings of ectoparasites from dipped and undipped cattle showed that all cattle picked up larvae from the pastures, but these developed into nymphs and adults only on the undipped animals. It has been shown that weekly dippings in "Gammexane" eventually brought the arsenic-resistant blue tick under control. This knowledge made it possible to safeguard the cattle industry in the Eastern Cape and Natal.

GRIFFITHS, R. B., & O'ROURKE, F. J. (1950.) **Observations on the lesions caused by *Cnemidocoptes mutans* and their treatment, with special reference to the use of "Gammexane".**—*Ann. trop. Med. Parasit.* **44**. 93-100. [Authors' summary copied *verbatim*.] **3290**

The clinical signs of infestation of poultry with *Cnemidocoptes mutans* are described, and a classification of the lesions of scaly leg is suggested. Previous methods of treatment are briefly reviewed. Two hundred and thirty-eight cases of scaly leg in poultry on two Cheshire farms are described. The affected birds were treated with various formulations of BHC, of which the most efficacious proved to be a 5 per cent. gamma isomer solution of BHC in miscible oil, diluted with water to give a strength of 0·1 per cent. gamma isomer. Mild and moderate cases were cured with a single dressing. Severe cases required two applications, which are probably best given at an interval of a fortnight.

CASTAGNOLI, B. (1948.) La rogna demodettica nel cinghiale. [**Demodectic mange in a wild boar.**]—*R.C. Ist. Sanit. pubbl. Roma.* **11**. 63-74. [English, French and German summaries. Abst. from English summary.] **3291**

The author describes a case of demodectic mange in the wild-boar, particularly with respect to the histological changes in the affected areas. He states that this disease has not previously been described in the above named animal.

See also absts. **3243** (tsetse-borne trypanosomiasis); **3429** and **3430** (reports, Scotland); **3432** (report, Mozambique); **3437** (book, parasitology).

PARASITES IN RELATION TO DISEASE [HELMINTHS]

KINGSCOTE, A. A. (1950.) **Liver rot (fascioloidiasis) in ruminants.**—*Canad. J. comp. Med.* **14**. 203-208. [English and French summaries. English summary copied *verbatim*.] **3292**

The history of the large American liver fluke (*Fascioloides magna*) and its life history are briefly reviewed. The results of a survey made in 1949 are given revealing the incidence of the parasite in domestic ruminants and the deer, elk and moose of Ontario. Recommendations are made regarding control measures.

TASSI, L. (1949.) Contributo alla casistica della echinococcosi dello sterno nei bovini. [**Echinococcosis of the sternum in cattle.**]—*Zooprofilassi.* **4**. 287-292. **3293**

An account of an echinococcus cyst in the sternum of an old steer.—R. MACGREGOR.

SHAKHNAZAROVA, N. G. (1946.) [**Helminthovoscopic diagnosis of echinuriasis in ducks.**]—*Proc. Moscow Zool. Park.* **3.** 130-135. [In Russian; English summary p. 135.] [Abst. in *Helminth. Abstr.* **15.** 138. (1949), copied *verbatim.* Signed: E.M.S.] **3294**

Shakhnazarova compared the efficacy of the concentrated saline, magnesium sulphate and hyposulphite flotation techniques and of the "washing-off" method in the diagnosis of echinuriasis in ducks. Flotation with saturated hyposulphite solution proved the most effective method. Not less than an hour should be allowed for settling. The specific gravity of the eggs appears to be slightly less than 1·2. The eggs are described.

ROMANOVA, N. P. (1946.) [**Diagnosis of *Cyathostoma* infection in the emu.**]—*Proc. Moscow Zool. Park.* **3.** 136-143. [In Russian; English summary p. 143.] [Abst. in *Helminth. Abstr.* **15.** 136. (1949), copied *verbatim.* Signed: E.M.S.] **3295**

Romanova compared various methods of examining faeces and tracheal mucus of infected emus for the eggs of *Cyathostoma* sp. The eggs are described. The specific gravity is about 1·11, and the Fülleborn technique was selected as being the cheapest and at the same time adequately effective. In examining tracheal mucus, the "native" smear method proved better than the Telemann and Brumpt techniques. Eggs were more numerous in mucus taken during the first half of the day. Examination of mucus was quicker and more reliable than faecal examination. *Cyathostoma* sp. in the trachea of the emu attains sexual maturity in 21-28 days.

COLBOURNE, M. J. (1950.) **Unsuccessful treatment of ascariasis with hetrazan.**—*Lancet.* **258.** 996. [Author's summary copied *verbatim.*] **3296**

Twenty-four patients infested with *Ascaris lumbricoides* were treated with hetrazan (1-diethylcarbamyl-4-methylpiperazine hydrochloride) and twenty-four with oil of chenopodium.

In the dosage used hetrazan was less effective than oil of chenopodium in the treatment of ascariasis.

GARDINER, M. R. (1950.) **Canine filariasis in North Queensland.**—*J. Amer. vet. med. Ass.* **116.** 52. **3297**

G. referred to a case of filariasis in a dog, of which the outstanding features were dyspnoea, low erythrocyte count, raised leucocyte count and sedimentation rate, enlargement of the liver, absence of fever and of microfilariae. At P.M. examination a fatty liver, pneumonic hepatization and infarction of the lungs were found. The pulmonary arteries in the affected areas contained necrotic material and peripherally, immature filaria.—H. PLATT.

I & II. OTTO, G. F., & MAREN, T. H. (1950.) **Studies on the chemotherapy of filariasis. V. Studies on the pharmacology of arsenamide and related arsenicals. VI. Studies on the excretion and concentration of antimony in blood and other tissues following the injection of trivalent and pentavalent antimonials into experimental animals.**—*Amer. J. Hyg.* **51.** 353-370; 370-385. [Authors' summaries copied *verbatim.* For previous parts, see *V.B.* **20.** 452.] **3298**

III. OTTO, G. F., & MAREN, T. H. (1950.) **Studies on the chemotherapy of filariasis. VII. Comparative review of the possible therapeutic agents available for canine and human filariasis.**—*Ibid.* 385-395. [Abst. from authors' summary.] **3299**

I. Acute and chronic toxicity studies were made on various species of laboratory animals including the white mouse, cotton rat, rabbit, dog and monkey with arsenamide and to a lesser extent with related phenyl arsenoides and phenyl arsonic acids. The acute (single injection) LD_{50} of arsenamide for mice is about 11·0 mg As/kg, which is approximately the toxicity of oxophenarsine hydrochloride (mapharsen). Rabbits, dogs and monkeys tolerate arsenamide in intravenous doses of about 1·0 mg As/kg daily for 3 to 4 weeks without any demonstrable injury. Doses as low as 0·2 mg As/kg daily for 15 days are apparently effective against *Dirofilaria immitis* of the dog and *Wuchereria bancrofti* of man. At either dose level there is no appreciable accumulation of arsenic in the tissues of any of the animals, the adult worms containing about as much as any of the host tissues and more than most of these tissues. In toxic doses the arsenic accumulates in various tissues, particularly the liver and kidney, and it is indicated that this does not occur even with the same dose when the animal survives it without demonstrable ill effects. The possible implications are discussed. Following the administration of arsenamide, the arsenic is excreted nearly equally by feces and urine, usually totalling 10 to 20 per cent in 48 hours. Thereafter excretion is much slower. Either buffered or unbuffered solutions of arsenamide are stable for 2 years when stored in amber ampoules in the dark, either at refrigerator temperatures or at room temperatures.

II. In general, trivalent antimony has a marked affinity for erythrocytes but leaves these cells quickly during 24 to 48 hours to be stored in various fixed tissues, notably the thyroid and the liver. Pentavalent antimony has apparently no such affinity for erythrocytes and frequently none may be found in them even when plasma concentrations are high. Storage of pentavalent antimony is most concentrated in the thyroid and liver but spleen, kidney and lung may have fairly high concentrations. The urine-over-feces ratio of excretion is higher in most species of mammals following the administration of pentavalent antimony than after the trivalent form of the metal. However, the ratio changes just as much with the species of mammal used as with the valency of the metal injected. The mouse, of all the species studied, has the highest fecal excretion rate and man and the dog the lowest. The question of whether or not pentavalent antimony is reduced in the body to the trivalent form is discussed but no precise conclusion is reached.

III. Of two groups of compounds, the pentavalent antimonials and the phenyl arsenoxides (As^{III}), classified as primary adulticides, arsenamide was found to kill the adults of *Litomosoides carinii* and *Dirofilaria immitis* at easily tolerated doses and there are indications that the drug is lethal to *Elaeophora Schneideri* in sheep and *Wuchereria bancrofti* in man. Of the microfilaria (the embryonic or prelarval forms) only those of *W. bancrofti* are gradually killed during treatment at the same dose; those of *L. carinii* are in part killed at higher doses; those of *D. immitis* are uninjured. The drug is of value in treatment of *W. bancrofti* infections in man administered in doses of 0·2 mg. As per kg. intravenously daily for 15 days.

In treatment of canine filariasis it is effective at the same dose but has no secondary effect on the microfilaria. About twice this dose of arsenamide (caparicide, caparsolate sodium) was recommended, *i.e.*, 0·4-0·45 mg. As per kg. intravenously, daily for 15 days. Jackson (1949) recommended the use of fuadin as a primary microfilaricide but the authors point out that this involves the use of a second metallic compound.

The compounds which are primarily microfilaricides are the piperazines (hetrazan), cyanines and trivalent antimonials. Of these hetrazan has had the widest application and is the primary microfilaricide with the widest margin of safety. The dose may therefore be increased sufficiently to obtain the secondary effect upon the adults of some species. Hetrazan is of value in the treatment of *W. bancrofti* and *L. loa*. The minimum dose to have maximum effect appears to be above 0·2 mg. per kg. t.i.d. for 21 days.

Rollinson, D. H. L., Soliman, K. N., & Mann, K. H. (1950.) **Deaths in young ducklings associated with infestations of the nasal cavity with leeches.**—*Vet. Rec.* **62.** 225-227. **3300**

It is suggested that large numbers of leeches, *Protoclepsis tessellata*, in the nasal cavity caused the death of ducklings.—E. Eden.

See also absts. **3278** (action of rat immune serum on *Taenia* larvae); **3282** (internal parasites in dogs); **3329** (strongylosis); **3429** and **3430** (reports, Scotland); **3437** (book, parasitology).

SPONTANEOUS AND TRANSMISSIBLE NEOPLASMS AND LEUCAEMIAS [INCLUDING FOWL PARALYSIS]

Orlandini, C. (1948.) Dermoide corneale in un vitello. [**Corneal dermoid cysts in a calf.**]—*Nuova Vet.* **24.** 154-158. **3301**

The author describes a dermoid cyst on the cornea of a calf 22 days old. He describes the histological aspect of the growth.

—B. Baldelli.

Koletsky, S., Bonte, F. J., & Friedell, H. L. (1950.) **Production of malignant tumors in rats with radioactive phosphorus.**—*Cancer Res.* **10.** 129-138. [Authors' summary copied *verbatim*.] **3302**

One of the late effects observed in rats injected with large doses of radioactive phosphorus was the development of malignant neoplasms. Of thirteen tumors, ten were osteogenic sarcomas, situated most frequently in the jaw and also occurring in the spine, tibia, femur, or ilium. Four of the neoplasms metastasized to the lungs. There were three squamous-cell carcinomas involving the face and associated with exophthalmos.

The neoplasms occurred in animals which received (a) a single LD_{50} dose of P^{32} (average latent period of 290 days) and (b) repeated doses of 1·5 μc. per gram of P^{32} (average latent period of 165 days). The incidence of tumor development was about 40 per cent.

Atypical proliferation of bone was usually found in these rats, and the lesions may have served as precursor to malignant change.

Rask-Nielsen, R. (1948.) **On the development of tumors in various tissues in mice. Following direct application of a**

carcinogenic hydrocarbon.—*Acta path. microbiol. scand.* Suppl. No. **78.** pp. 1-144. [In English: Danish summary.] **3303**

Experiments are reported which were designed to confirm the hypothesis that carcinogenic action is capable of inducing the development of tumours only in those tissues in which such tumours occur spontaneously, and which may thus be considered to be genetically predisposed to tumour formation. In mice of a particular strain, single doses of a carcinogen were injected directly into an organ which was either one of those which were known to be the site of spontaneous tumours in that strain, or was one in which spontaneous tumours had not so far been reported to occur; the development of tumours at the site of injection ("local" tumours) or in other parts of the body ("non-local" tumours) was then noted.

It was found that with the dosages of carcinogen used, "local" tumours could be produced in some, but not all, of the organs in which tumours occur spontaneously in the strain of mice used, and only in one instance in the organs not known to give rise to spontaneous tumours. No "non-local" tumours developed in organs which do not produce spontaneous tumours.

The thymus and the lung were found to be the tissues most susceptible to carcinogenic action, and they developed specific tumours after the carcinogen was applied either to them or to other sites of the body. The subcutaneous tissue was also susceptible to "local" tumour formation. No specific tumours were produced by local injection of the carcinogen into a lymph-node, nor, apart from one possible case only, were "local" tumours produced in the spleen; however, following application of the carcinogen elsewhere, leucaemic infiltrations developed in these organs, and it is suggested that these infiltrations, as well as those occurring spontaneously in the normal mice, might actually have been due to spread of neoplastic cells from the thymus. The failure to produce "local" tumours in the mammary gland may have resulted from concomitant suppression of ovarian oestrogen production, but the failure of skin tumours to develop following intradermal injection could not be readily accounted for.

The findings are discussed at length, and are held to afford "confirmation, although not perhaps final proof" of the author's hypothesis.

—E. Cotchin.

Stevens, C. D., Meinken, M. A., Quinlin, P. M., & Stewart, P. H. (1950.) **The distribution of radioactive iodine in mice with and without tumor 15091a after injection of radioactive sodium iodide.**—*Cancer Res.* **10.** 155-161. [Authors' summary copied *verbatim.*] **3304**

Measurements were made of the distribution of I^{131} among the tissues of 206 mice killed either 45 minutes or 25 hours after injection of labelled sodium iodide in quantities varying from 0·0013 to 1·3 μg. of iodine per gram of mouse. Smaller quantities of I^{131} were found in the thyroid glands of mice with implants of tumor 15091a than in the thyroids of control mice, although the concentrations of I^{131} in their blood were similar. Higher concentrations of I^{131} were found in the spleens of tumor mice than in their blood, on some occasions. The explanation for this is uncertain. Splenic enlargement in mice without tumors was not a sufficient cause for such concentration of I^{131}. Compared to the concentrations of I^{131} in the sera, the livers and ear pinnae of mice contained lower concentrations of I^{131}, and their thymus glands contained higher concentrations than did the corresponding tissues in rats. Otherwise, the distribution of the injected iodide was similar in mice and rats.

Youngner, J. S., & Algire, G. H. (1949.) **The effect of vascular occlusion on transplanted tumors.**—*J. Nat. Cancer Inst.* **10.** 565-572. [Authors' summary copied *verbatim.*] **3305**

Using the transparent chamber technique in C3H mice, it has been found that vascular occlusion of 1 to 3 hours produced hemorrhage and cell damage in growing transplanted sarcoma tissues when blood flow was resumed. Mammary carcinoma and normal tissues treated in a similar manner were unaffected. Granulation tissues showed a response analogous to that of sarcoma. The relation of these findings to the possible role of local tissue anoxia in the mechanism of action of certain tumor damaging substances is discussed.

Gellhorn, A., Engelman, M., Shapiro, D., Graff, S., & Gillespie, H. (1950.) **The effect of 5-amino-7-hydroxy-1*H*-*v*-triazolo (*d*) pyrimidine (guanazolo) on a variety of neoplasms in experimental animals.**—*Cancer Res.* **10.** 170-177. [Authors' summary copied *verbatim.*] **3306**

The action of the guanine analog, 5-amino-7-hydroxy-1*H*-*v*-triazolo (*d*) pyrimidine, on a variety of experimental tumors has been reported. Three transplantable adenocarcinomas of the breast in mice (755, RC, and Eo771) were effectively inhibited by the chemical agent, whether therapy was instituted shortly after transplantation or after the tumor had become well established; anterior chamber transplants

of an undifferentiated squamous-cell carcinoma (Brown-Pearce) in rabbits' eyes were similarly controlled by the triazolo-pyrimidine. No demonstrable inhibitory effects of the chemical on an undifferentiated sarcoma (Sarcoma 180) could be detected, nor was there any apparent inhibition of an acute leukemia (9417) or lymphosarcoma (6C3HED) in preliminary experiments, with the dosage employed.

Using the changes in body weight during therapy as an over-all index of toxicity of the triazolo-pyrimidine, it was observed that the therapeutic activity of the drug against the tumors was not associated with significant toxicity to the host.

In spite of convincing evidence of tumor inhibition, no regression of established neoplasms under therapy was observed, and the viability of inhibited cells was unimpaired, as indicated by their ability to reproduce normally on subsequent transplantation. With the exception of the Brown-Pearce carcinoma, no morphological changes in the tumors of treated animals could be detected.

The results presented in this report fail to confirm the hypothesis of a uniform chemical pattern in all neoplastic tissue. However, the evidence at hand suggests that the triazolo-pyrimidine distinguishes a biochemical difference between normal tissues and certain carcinomas.

See also abst. **3382** (epithelioma of the eye).

Fawcett, D. W., Vallee, B. L., & Soule, M. H. (1950.) **A method for concentration and segregation of malignant cells from bloody, pleural and peritoneal fluids.**—*Science.* **3.** 34-36. **3307**

The cellular material from body fluids was suspended in saline and mixed with albumin solutions of different specific gravities. On centrifuging, generally four layers formed. They were, in descending order, saline, malignant and mesothelial cells, albumin solution, erythrocytes and leucocytes. This flotation method also produced a considerable concentration of the malignant cells.—E. Eden.

Lucas, A. M. (1949.) **Lymphoid tissue and its relation to so-called normal lymphoid foci and to lymphomatosis. I. Qualitative study of lymphoid areas in the pancreas of chickens.**—*Amer. J. Path.* **25.** 1197-1213. **3308**

The amount of lymphoid tissue found in the pancreas varied from 0-88·4%. Some of these lymphoid areas seem to have arisen from occluded blood vessels. Histological evidence of destruction of acinar tissue, pancreatic islets and intrinsic nerve ganglia were also observed. Hence it is concluded that the lymphoid areas in these birds can not be regarded as normal.

—E. Eden.

NUTRITIONAL AND METABOLIC DISORDERS

Watson, C. J., Kennedy, J. W., Davidson, W. M., Robinson, C. H., & Muir, G. W. (1947.) **Digestibility studies with ruminants. X. Relative associative effects of the roughages, timothy and alfalfa, with barley.**—*Sci. Agric.* **27.** 175-184. Discussion: p. 185. **3309**

In experiments using steers or sheep it was found that the digestibility of barley was the same when fed alone or when fed with a roughage (timothy or alfalfa). The individual figures of digestibility for dry matter, organic matter, nitrogen, ether extract crude fibre and nitrogen-free extract obtained are also reported.

—E. Eden.

Pounden, W. D., & Hibbs, J. W. (1949.) **The influence of pasture and rumen inoculation on the establishment of certain microorganisms in the rumen of young dairy calves.**—*J. Dairy Sci.* **32.** 1025-1031. **3310**

Young calves, four days of age, were given rumen inoculations with cud material from cows kept on pasture. This established the usual types of rumen protozoa and bacteria. Uninoculated calves took longer and had a smaller and less varied population. Although the body weight gains of the controls were satisfactory, they had mild diarrhoea and rough coats; hence it is considered that perhaps these animals were limited in their ability to utilize certain pastures because of the lack of some micro-organism.—E. Eden.

Smith, E. L., & Holm, A. (1948.) **The transfer of immunity to the new-born calf from colostrum.**—*J. biol. Chem.* **175.** 349-357. **3311**

Electrophoretic studies on the composition of serum protein of calves and lambs at birth and during the first 122 days of life are reported. New-born calf serum is devoid of slow moving globulin, but after ingestion of colostrum lacto-globulin appears; this protein fraction has been shown to carry immunity in bovine colostrum.

The antibody concentrations of calf serum against three antigens (diphtheria toxin, *Haemophilus pertussis* and vaccinia) were also determined. They were absent before the

ingestion of colostrum, there was a sharp rise after ingestion and a gradual decrease during the subsequent few weeks.—E. EDEN.

SAPIRO, M. L., HOFLUND, S., CLARK, R., & QUIN, J. I. (1949.) **Studies on the alimentary tract of the Merino sheep in South Africa. XVI. The fate of nitrate in ruminal ingesta as studied** *in vitro*.—*Onderstepoort J. vet. Sci.* **22.** 357-372. **3312**

When sheep are fed potassium nitrate, symptoms of nitrite poisoning such as methaemoglobinaemia often occur. Using ruminal ingesta the authors studied the effect of different diets and the addition of glucose on the *in vitro* conversion of nitrates to nitrites and the further breaking down to other compounds. The quantity of nitrite was increased with poor diets and decreased with the addition of sugar. *In vivo* experiments on sheep confirmed these results and indicated that the composition of the diet is important in determining the tolerance level of nitrates.—E. EDEN.

BUCCIERO, M. C., & ORTEN, J. M. (1949.) **The effect of cobalt on the oxygen capacity and the methemoglobin content of the blood.**—*Blood.* **4.** 395-397. **3313**

To find whether cobalt treatment interfered with cellular oxidation, a study was made on its effect on the transport of oxygen in the blood. One mg. of cobalt, as cobalt sulphate, was fed daily to rats for 20 weeks. This treatment did not decrease the oxygen capacity of the blood nor did it affect the methaemoglobin content. Spectrographic examinations also did not reveal any significant amounts of cobalt in the blood. —E. EDEN.

MCCARROLL, P. J. (1948.) **A preliminary note on the use of cobalt in veterinary practice.**—*Irish Vet. J.* **2.** 218-219. **3314**

In the Carndonagh area, where young stock are grazed on bogland and rough hillside grazing, beneficial results are claimed from the administration of cobalt solution to cattle and sheep, particularly in animals which remained unthrifty after anthelmintic or fluke treatment, and in anoestrous cows.—A. G. SINGLETON.

BRAUDE, R., FREE, A. A., PAGE, J. E., & SMITH, E. L. (1949.) **The distribution of radioactive cobalt in pigs.**—*Brit. J. Nutrit.* **3.** 289-292. [Authors' summary copied *verbatim*.] **3315**

Physiological doses of radioactive cobalt were fed to two pigs for 6 weeks and the final distribution of radioactive cobalt in the carcasses determined. The relative amounts of radioactive cobalt found in most organs or tissues were similar to those found by Comar & Davis (1947) in a pig after a single oral dose of radioactive cobalt. The values for pancreas, liver and bile were lower, and those for cartilage and long bone higher, than those recorded by Comar & Davis.

SMITH, S. G., BLACK-SCHAFFER, B., & LASATER, T. E. (1950.) **Potassium deficiency syndrome in the rat and the dog. A description of the muscle changes in the potassium-depleted dog.**—*Arch. Path.* **49.** 185-199. **3316**

Rats kept on a diet deficient in potassium lost weight but did not develop any specific syndrome. On the other hand progressive paralysis and death from respiratory failure were the symptoms observed in dogs. No lesions were found in the central nervous system. The authors considered that this type of muscular disease may be similar to periodic paralysis in man.—E. EDEN.

MCNAUGHT, M. L., & OWEN, E. C. (1949.) **The iron requirement of rumen bacteria.**—*Biochem J.* **44.** No. 3. p. xxiv of Proceedings. **3317**

By the use of chelating agents (compounds that form complexes with metals) the iron present in rumen liquor was made unavailable for bacteria. This inhibited growth when added to an *in vitro* culture, but growth could be restored by the addition of ferrous sulphate. From these experiments the authors estimated the requirements of bacteria for iron to be about one p.p.m.—E. EDEN.

HELGEBOSTAD, A., & BOHLER, N. (1949.) **Experimental rickets and tetany in the fox and the dog.**—*Vet. Rec.* **61.** 735-738. Discussion: pp. 738-742. **3318**

Fox cubs and puppies given a diet low in phosphorus and vitamin D, but high in calcium, developed rickets. If their diet was suddenly changed so as to contain easily absorbable phosphorus, the blood calcium levels dropped and tetany developed. Animals with rickets induced by a low calcium and high phosphorus diet were not affected in this dramatic way by sudden changes in the diet, but showed all the time a muscular stiffness and nervousness.

The topics discussed by various speakers after the presentation of this paper included: the role of other factors in the diet and possible breed differences in the vitamin D requirements of dogs.—E. EDEN.

LUECKE, R. W., DUNCAN, C. W., ELY, R. E., JONES, E., GREENE, A. J., & TULL, C. (1947.) **Milk studies. I. Some vitamins and trace elements found in the colostrum of the dairy cow, beef cow and swine.**—*Arch. Biochem.* **13.** 277-282. **3319**

Iron, copper and cobalt were estimated in the colostrum of Jersey, Holstein and beef cows. Vitamin A, carotene and some of the vitamins of the B complex (thiamine, riboflavin, pantothenic and nicotinic acid) were estimated in the above breeds and also in the colostrum of the sow. Generally the Jersey and Holstein breeds had the highest concentrations of these components, with the notable exception of nicotinic acid which was highest in the sow.

—E. Eden.

Ferguson, W. S. (1948.) **A factor in pastures affecting muscle activity.**—*Rep. Proc. Conf. Grassl. & anim. Hlth.* 1948. pp. 74-84. **3320**

Extracts of clover juice had a marked inhibitory action on isolated rabbit's muscle. Some, but not all, extracts of grass behaved similarly. The potency of the extracts obtained from plants during late summer was generally smaller. Attempts were made to concentrate this substance. It is an ether extractable, yellow, crystalline compound, contains no nitrogen, has phenolic properties and seems to be associated with chloroplasts. The possible significance of this factor in the aetiology of bloat is discussed.—E. Eden.

Eden, E., & Sellers, K. C. (1950.) **Hydrolysis and esterification of vitamin A during absorption. [In cattle and sheep.]**—*Biochem. J.* **46.** 261-266. [Authors' summary copied *verbatim.*] **3321**

Calves and sheep were dosed with vitamin A alcohol or ester (5,000 i.u./kg. of body weight) and slaughtered 4 hr. after dosing. The concentrations of vitamin A alcohol and of ester were determined in the blood before and after dosing, and, on slaughter, in the intestinal contents and wall and in the lymph.

Four hours after the administration of vitamin A esters, almost complete hydrolysis had occurred in the intestinal lumen of some animals, whereas in others hydrolysis was only partial.

Determinations made on the mucosa after dosing with vitamin A ester showed that the ester fraction contained 73 and 56% of the total vitamin A in calves and sheep respectively. The values obtained after dosing with vitamin A alcohol were 82 and 77% for the two species, showing that esterification had taken place.

After passing across the intestinal wall the absorbed vitamin A apparently remained esterified, as the rise in the vitamin content of the intestinal lymph following administration of either form was nearly all in the ester fraction. In the normal adult blood also the increase after administration of vitamin A was mainly in the ester form.

Hamre, C. J. (1950.) **Dilation of the bile ducts and intrahepatic lesions with destructive jaundice in rats fed diets deficient in vitamin A.**—*Amer. J. med. Sci.* **220.** 183-194. [Author's conclusions copied *verbatim.*] **3322**

Metaplasia of the epithelium of the ducts of the biliary system occurs in vitamin A deficiency. Detached masses of epithelial cells may obstruct the bile duct at the duodenal end and through resulting stasis of bile cause dilation of the ducts. Stasis of bile and dilation of intrahepatic ducts are accompanied by hypertrophy of the portal tracts and limited degenerative changes of the peripheral portions of the lobules of the liver.

Braude, R. (1949.) **Growth factor for pigs in liver extracts and its relation to piglet anaemia.**—*Brit. J. Nutrit.* **3.** 293-300. [Author's summary copied *verbatim.*] **3323**

Piglets reared indoors and given during their second week of life a supplement of liver extract grew on the whole at a better rate than their control litter-mates. The beneficial effect of the liver extract was manifested only when it was given together with an iron supplement to prevent anaemia. Yeast extract had no similar growth-promoting effect. The liver extract had no effect, however, on the growth rate of piglets reared out of doors. The liver extract had no effect on the blood picture of the piglets, as measured by haemoglobin values.

Schoop, G. (1950.) Entwicklungs- und Pigmentierungsstörungen an Säugetierhaaren. [**Hair pigmentation disturbances in mammals.**]—*Tierarztl. Umsch.* **5.** 37-41. **3324**

The various factors causing deficient hair pigmentation are discussed. Cases of depigmentation of young foxes and other fur-producing animals are reported. Several different vitamin preparations were tried, but "murnil" (a biotin preparation) was best in restoring the colour to the fur. S. considered that the deficiency occurred during intra-uterine life.

—E. Eden.

Luecke, R. W., Thorp, F., Jr., McMillen, W. N., & Dunne, H. W. (1949.) **Pantothenic acid deficiency in pigs fed diets of natural feedstuffs.**—*J. Anim. Sci.* **8.** 464-469. **3325**

On a diet of maize, soya bean oil meal and minerals, pigs developed locomotor incoordination and myelin degeneration. This could be prevented by feeding calcium pantothenate. Both the bood and urinary levels of pantothenic acid were higher in the supplemented group. Blood levels were fairly uniform

within the group; there were however wide variations in urinary excretions.—E. EDEN.

ABELSON, P. H., & DARBY, H. H. (1949.) **The synthesis of Vitamin B_{12} in the digestive system of sheep.**—*Science.* **110.** 566. **3326**

The authors fed 0·4 mg. cobalt^{56} and 1·0 mg. of cobalt containing traced cobalt respectively to two normal sheep. In the faeces approximately half of the traced cobalt appeared in an organic form which was soluble in butanol. Vitamin B_{12} is similarly soluble in butanol. The faeces were found to contain "large quantitites" of vitamin B_{12} by microbiological assay.

The authors suggest that cobalt sensitive bacteria in the sheep's rumen are responsible for synthesizing vitamin B_{12}.

—R. J. FITZPATRICK.

HAQUE, M. E., LILLIE, R. J., SHAFFNER, C. S., & BRIGGS, G. M. (1948.) **Effect of vitamin deficiencies in New Hampshire chicks injected with high doses of thyroxine.**—*Endocrinology* **42.** 273-278. **3327**

Intramuscular injection of thyroxin into chicks one day old produced blackening at the base of wing feathers. The lack of some vitamins of the B complex (aneurin, pyridoxine, biotin, pantothenic acid and riboflavin) in the diet did not prevent pigmentation. In the absence of vitamins D and E, however, thyroxin activated the melanin cells to an even greater extent, as more than the usual amount of pigment was deposited. Limited experiments on the interrelationships of folic and pantothenic acid with thyroxin were also reported.

—E. EDEN.

ANON. (1948.) **Goiterous chicks from thyroprotein-fed hens.**—*Endocrinology* **42.** 326-328. **3328**

Rhode Island Red hens were fed 0·02% thyroprotein. At hatching the thyroid glands of the chicks from these hens were enlarged and weighed approximately twice those of the control ones. The effect of pre-natal thyroprotein feeding was more marked in females than in males. The thyroid glands returned to normal size if the chicks were put on a standard ration.—E. EDEN.

QUIN, A. H. (1950.) **The control of equine strongylosis and periodic ophthalmia with a ration-additive.**—*Brit. vet. J.* **106.** 116-118. **3329**

Rations of horses were supplemented with phenothiazine, riboflavin, vitamin D and minerals. This treatment reduced the strongyle egg counts of the faeces. Also no further cases of periodic ophthalmia were observed.

—E. EDEN.

SHANKS, P. L. (1950.) **Scouring in calves fed on milk from cows grazing new leys.** —*Vet. Rec.* **62.** 315-316. **3330**

As the common causes of scours were ruled out the possibility of a factor in the new, clover rich grass which would stimulate intestinal motility was considered. The presence of such a factor in clover has been previously reported. Scouring could be stopped in these calves when the cows were housed or transferred to pastures where the grass was old and rank.—E. EDEN.

ANON. (1950.) **The adaptation syndrome.**—*Brit. med. J.* Jan. 28th. pp. 234-235. **3331**

Diseases of adaptation may be caused by an inbalance of the two groups of hormones (gluco and mineralo-corticoids) secreted by the adrenal gland. In experimental animals it was possible to produce certain aspects of the disease by overdosage of mineralo-corticoids and they could be cured by cortisone (a gluco-corticoid). Whether cortisone acts in a similar manner in relieving several diseases in man is not yet known, but in rheumatoid arthritis a deranged metabolism of one of the steroids (prozesterone) at any rate has been demonstrated.—E. EDEN.

See also absts. **3338** (rupture of gastrocnemius tendon in fowls); **3438** (book, nutrition of the dog).

DISEASES, GENERAL

LANFRANCHI, A. (1947.) Constatazione e considerazioni sull'uso dei vaccini vivi con particolare riguardo alle malattie infettive dei suini. [**Considerations on the use of live vaccines with special reference to infectious diseases of pigs.**]—*Atti Soc. ital. Sci. vet.* **1.** 158-167. [French and German summaries.] **3332**

L. opposed the use of live vaccines for immunization against infectious diseases of pigs, especially swine fever.—E.G.

TURNER, V. (1949.) Prilog histopatologil spontanih fraktura kralježaka svinja u proizvodnji vrbančeva hiperimunog seruma.—[**Histopathology of spontaneous fracture of vertebrae in pigs used for the production of swine erysipelas antiserum.**] —*Vet. Arhiv.* **19.** 163-189. [English and German summaries. [English summary modified.] **3333**

An account is given of spontaneous fracture of the lumbar vertebrae in fifteen pigs used for

the production of swine erysipelas antiserum at the State Serum Institute, Kalinovica, Yugoslavia. A detailed examination, both naked eye and microscopic, was made of material from five of the cases. There was mucoid degeneration of the epiphyseal cartilage and in adjacent vertebrae there were chronic regressive processes with the production of osteoid tissue with periosteal osteophytes. It is stated that the osteophytes may have pressed upon the spinal nerves and spinal cord causing some degree of paralysis before the fracture occurred.

T. suggests that the swine erysipelas bacillus may have provoked infection in the epiphyseal cartilage in animals that had a tendency to rickets.

ALLEN, F. M., & LISA, J. R. (1950.) **"Scottie" —twelve years diabetic.**—*Endocrinology*, **46.** 282-290. [Authors' conclusions copied *verbatim*.] **3334**

A dog with severe diabetes after partial pancreatectomy was able to live for twelve years under control of the sugar with insulin, without organic or vascular pathology. As far as known, this is the longest recorded survival with any form of severe experimental diabetes.

The retention of unusual liveliness, together with the normal autopsy findings, indicated that life could have been considerably longer except for an accidental termination. The controlled diabetes evidently did not reduce longevity. The continuous limitation of calories and body weight is suggested as possibly prolonging both life and vigor, in accord with demonstrations in other species.

Some interrelations of human and canine diabetes are discussed. Differences of species must be considered in interpreting experiments. The present observation can stand only as an isolated fact, until suitable control experiments along the lines indicated may elucidate the cause of diabetic arteriosclerosis.

HOGG, A. H. (1948.) **Osteodystrophic disease in the dog, with special reference to rubber jaw (renal osteodystrophy) and its comparison with renal rickets in the human.**—*Vet. Rec.* **60**: 117-122. **3335**

H. presents evidence of 26 cases of osteodystrophy in the dog and in the light of the symptoms observed discusses the aetiology of this syndrome. His general conclusions are that distinction should be drawn between renal and non-renal forms.

Renal osteodystrophy (rubber jaw) is primarily a nephritic condition with bone lesions, particularly of the skull, appearing later. Uraemic symptoms are not severe. The possible association of the parathyroid is discussed.

The non-renal form occurs only in the young dog with bone lesions resembling rickets; an unusual feature is the development of bone lesions of the skull resembling rubber jaw. These cases are seen as border-line rickets, but deficiences other than those ordinarily ascribed to rickets must play some role in their causation. —C. W. OTTAWAY.

BODINGBAUER, J. (1950.) Histopathologische und bakteriologische Studien über die Zahnbein-Karies des Hundes. [**Histology and bacteriology of caries in dogs.**]—*Wien. tierärztl. Mschr.* **37**. 323-329. **3336**

The author describes histological studies, extending over a number of years, on caries of the dentine in teeth extracted from dogs or obtained P.M. After decalcification the teeth were embedded in celloidin or in gelatin and stained by haematoxylin and eosine and by Gram, or for fat with Sudan III.

The essential changes occur, as in man, in the protoplasmic processes of the odontoblasts (fibres of Tomes). These fibres show calcification, fatty changes and cloudy swelling and finally become fragmented and degenerate. Bacterial invasion of the damaged dentine canals occurs and they become widened and intercommunicating. Cavitation is the end result. Streptococci seem to be the commonest organism found within the carious foci. Some interesting photomicrographs are shown. The process of caries in the dog is similar to that occurring in man.—E. G. WHITE.

BODINGBAUER, J. (1947.) Vergleichende Betrachtungen über das Vorkommen der Karies beim Menschen und beim Hunde. [**The occurrence of dental caries in human beings and in dogs.**]—*Z. Stomatol.* **44**. 333-349. **3337**

Information from the literature on the incidence of caries in dogs is given in tabular form. B. recorded his own observations on the condition as seen among 2,113 dogs examined in private practice in Vienna over a period of 15 years, and compared his findings with those of Driak in 1,100 human patients at the Vienna University Dental Clinic. Photographs and radiographs illustrate the article.

Caries was seen in 5·8% of the 2,113 dogs, and in 71% of the 1,100 human dental patients. It was shown that the incidence in dogs is more nearly equal to that of human beings living under more primitive dietary conditions. In male dogs, the incidence of caries increased up to the third year of life, then fell, rising again steeply from the fourth to the sixth year, falling

again to the ninth year; in bitches, the incidence curve showed two peaks, in the fourth and eighth years. In man, caries was most frequent between 20 and 40 years of age. The incidence in 1,248 male dogs was 6·01%, in 865 bitches 5·43%. In human beings, the incidence in males and females was about equal.

In both dogs and human beings the maxillary teeth were more often affected than the mandibular teeth. In dogs, caries affecting three different sites in the tooth was seen—on the masticatory or on the contact surfaces, or at the neck—but the condition occurred most frequently in the first-named position. Caries in this position was practically restricted to the normally-long-jawed dog, being rare in breeds with shorter jaws, and absent from the extremely brachygnathic breeds. The Wire-haired Fox Terrier was the breed most often affected. The first upper molar was the most common site of caries. Mechanical trauma may be an underlying aetiological factor, due to the posterior tuberculate crown of the lower carnassial tooth pressing in the central fossa of the first upper molar, and in certain conditions causing trauma of the enamel, which allows entry of micro-organisms and also exposes the underlying structures to attack by acid products of fermentation of food débris.—E. Cotchin.

Chute, H. L. (1950.) **Rupture of the gastrocnemius tendon in chickens.**—*Canad. J. comp. Med.* **14.** 218-221. [Author's summary copied *verbatim*.] **3338**

Rupture of the gastrocnemius tendons of chickens has been observed just above the hock. The etiology is not known. The present information indicates a nutritional or genetic relationship. Not over ten per cent. of flocks are affected. One typical case of six hundred capons is cited of which ten per cent. were affected. Pathology shows an increasing haemorrhage until rupture takes place. Later a fibrosis takes place until the tendon-muscle is partially healed leaving an enlargement. Bacteriological cultures were negative.

Firstbrook, J. B. (1950.) **The effect of changes in body weight on atherosclerosis in the rabbit.**—*Science.* **3.** 31-33. **3339**

Three batches of rabbits, one serving as controls, were fed the same ration; one batch was given 60% and the other 40% of the food taken by the contols. After a fortnight all were given cholesterol. The smaller the food intake, the smaller was the incidence of atherosclerosis. It is suggested that many preventive measures for this disease might act indirectly by reducing the body weight.—E. Eden.

See also absts. **3263** ("X" disease); **3329** (periodic ophthalmia); **3439** and **3444** (books).

POISONS AND POISONING

Marais, S. J. S., Botha, M. L., & Klintworth, H. (1950.) **The effect of arsenical locust bait on sheep and on the Karroo Veld.**—*Fmg. S. Afr.* **25.** 91-93. **3340**

Soon after the dispersal of arsenical locust baits acute cases of poisoning of sheep may occur, but in a short time the bait is removed by wind erosion and the fixation of arsenic in an insoluble form by the soil. It is therefore advisable to keep livestock away from the baited areas for a week or two. After this time, if care is exercised, cases of chronic arsenic poisoning are unlikely; no significant differences were observed in condition, growth or wool production between sheep reared on experimental locust bait areas and their controls.

—E. Eden.

Chaudhury, B., & Robinson, V. B. (1950.) **Clinical and pathologic effects produced in goats by the ingestion of toxic amounts of chlordan and toxaphene.**—*Amer. J. vet. Res.* **11.** 50-57. 22 refs. **3341**

These two chlorinated hydrocarbons, produced because of their promise as insecticides, are available as emulsions or wettable powders and may cause grave symptoms, or death, in warm-blooded animals. Most of the vital organs (gastro-intestinal tract, liver, kidneys, heart, lungs, lymph nodes, brain and spinal cord) are susceptible to their toxic actions and the immediate cause of death is the retarded oxygenation of the blood as a result of pulmonary oedema, emphysema and atelectasis. A severe renal reaction and suppression of urine caused accumulation of the compounds and exacerbated the toxic effects. Toxaphene is more rapidly toxic than chlordane and in goats causes petechial haemorrhages on the heart's epicardial surface. The lesions were indicated clinically by increased reflexes, convulsions, muscular tremors, oliguria, anorexia, anoxia and death.—Malcolm Woodbine.

DuBois, K. P. (1948.) **New rodenticidal compounds.**—*J. Amer. pharm. Ass.* **37.** 307-310. **3342**

Mention is made of a German preparation, "castrix", 2-chloro-4-dimethylamino-6-methyl pyrimidine, which is said to be about five times more toxic to rats than "antu" (α-naphthylthiourea) or sodium fluoroacetate. Sodium

pentobarbital was found to be effective as an antidote for animals poisoned with this substance.—E.M.J.

LAUG, E. P., NELSON, A. A., FITZHUGH, O. G., & KUNZ, F. M. (1950.) **Liver cell alteration and DDT storage in the fat of the rat induced by dietary levels of 1 to 50 p.p.m. DDT.**—*J. Pharmacol.* **98.** 268-273. [Author's summary copied *verbatim*.] **3343**

Accumulation of DDT in the fat occurs at every level of intake, down to and including 1 p.p.m. Greater storage is favored in the female. With time there is a progressive rise in storage, reaching a maximum at 19 to 23 weeks. The age of the animal does not appear to affect the rate at which DDT is stored in the fat. From 50 to 75 per cent. of the DDT stored in fat still remains one month after a DDT-free diet; 25 per cent. remains after three months. Hepatic cell alterations occur from diets containing as little as 5 p.p.m. of DDT.

See also abst. **3191** (action of *Streptococcus pyogenes* toxin).

PHARMACOLOGY AND GENERAL THERAPEUTICS

(For treatment of specific infections, see under the appropriate disease).

GRAF, H. (1948.) Supplementum primum der Pharmacopoea Helvetica Editio quinta und Arzneiabgabe aus der tierärztlichen Privatapotheke. [**First supplement to the fifth edition of the Swiss Pharmacopoeia.**]—*Schweiz. Arch. Tierheilk.* **90.** 727-729. **3344**

A summary of changes and additions of veterinary interest which are included in the first supplement to the Swiss Pharmacopoeia, the fifth edition of which appeared in 1941.

—ROY MACK.

GRIGNANI, A. (1948.) Prontuario terapeutico ad uso del veterinario practico. [**Therapeutic handbook for veterinary practitioners.**]—pp. 362. Milan: Istituto Sieroterapico Milanese S. Belfanti. L. 800. **3345**

This is a pocket-book for veterinary practitioners. Its two main parts consist of a Therapeutic Index, in which 286 diseases are listed alphabetically, together with concise notes on prophylaxis and treatment, and a "Pharmacological Dictionary" alphabetically arranged in tables. Diagnostic and therapeutic sera and vaccines are treated in the same way. This part is followed by a table of gestation periods for five domestic species, and another for determining the age of a foetus. There is a chapter on the absorption of drugs administered by various routes.

Other conventional items are dealt with.

—G. P. MARSHALL.

DEAN, R. F. A. (1950.) **Iodine as an aid to lactation.**—*Lancet.* **258.** 762-763. **3346**

Twelve drops of an iodine solution were given daily to lactating women, who had normal histories, but whose milk yields were low. This treatment caused no statistically significant improvements. It is suggested that previous experiments claiming beneficial effects of iodine were not satisfactorily controlled.

—E. EDEN.

RONNING, M., & KNODT, C. B. (1950.) **Blood plasma vitamin A and carotene of dairy calves treated with sulfonamides.**—*J. Dairy Sci.* **33.** 424-429. [Authors' summary slightly modified.] **3347**

Observations were made to determine possible effects of sulfonamide adminstration upon the blood plasma vitamin A and carotene levels of young calves.

On the basis of the data obtained, it does not appear that sulfonamide therapy has any detrimental effects on the normal vitamin A and carotene metabolism of calves when the drugs are administered as recommended.

ALBERTS, J. O., & GRAHAM, R. (1948.) **Sulfamerazine in the treatment of fowl cholera in turkeys.**—*Amer. J. vet. Res.* **9.** 310-313. **3348**

No death occurred for five days after exposure among 30 turkeys experimentally infected with *Pasteurella avicida*, when they were given twice daily oral doses of sulphamerazine. Relapses however were observed four days after treatment was stopped, but the infection was eliminated eventually with repeated dosage. The mortality rate in the untreated group was 100%. In a field outbreak, 0·5% sulphamerazine in the mash reduced the mortality to insignificant levels. Blood sulphonamide concentrations for the experimental and the field group are also reported.—E. EDEN.

KING, E. Q., LEWIS, C. N., WELCH, H., CLARK, E. A., JR., JOHNSON, J. B., LYONS, J. B., SCOTT, R. B., & CORNELY, P. R. (1950.) **Clinical observations on the use of terramycin hydrochloride.**—*J. Amer. med. Ass.* **143.** 1-4. [Authors' summary copied *verbatim*.] **3349**

Terramycin hydrochloride, a newly discovered antibiotic which *in vitro* has been shown to have a wide bacterial spectrum, was admini-

stered to 30 patients having various types of infections. These included pneumococcic pneumonias, urinary tract infections due to Escherichia coli and Aerobacter aerogenes, whooping cough, bacteremia due to Salmonella choleraesuis var. Kunzendorf, pneumonitis and lung abscess with mixed bacterial infections. Assayable amounts of terramycin were found in the blood and urine within one hour and for five hours after the administration of 750 mg. of the drug by mouth. From these preliminary observations, terramycin appears to be a useful addition to the important class of antibiotic drugs. The results obtained in the treatment of urinary tract infections were promising. In our experience there was a low incidence of side reactions, most of which were mild and subsided with continued treatment. In an occasional instance severe gastrointestinal distress, including diarrhœa, may necessitate withdrawal of the drug.

VOLINI, I. F., SCLAES, W. H., & FELSENFELD, O. (1950.) **Use of penicillin O in patients hypersensitive to penicillin G.**—*J. Amer. med. Ass.* **143.** 794-797. [Authors' conclusions copied *verbatim.*] **3350**

Penicillin O given by inhalation, in oral troches and parenterally, was used in 57 patients sensitive to penicillin G. None showed untoward reactions. Penicillin O proved as effective in the series of diseases as penicillin G. Thus penicillin O may be useful in patients who are hypersensitive to penicillin G. Reactions previously observed after the administration of penicillin G do not recur after the use of penicillin O in most cases.

CARMICHAEL, J. (1950.) **Dimidium bromide or phenanthridinium 1553. A note on the present position.**—*Vet. Rec.* **62.** 257. **3351**

A toxic reaction, probably photosensitization, has occurred in cattle in Africa after the subcutaneous administration of 1 mg. per kg. dimidium bromide. Cattle in England given as much as 6 mg. per kg. intravenously exhibited no adverse effects although the observations were continued for eight weeks. It is suggested that the different experience in Africa may be due to either more intense sunlight or to the presence or absence of a different dietetic factor.—E. EDEN.

CLOW, D. G. (1950.) **Dimidium bromide and antrycide in the control of bovine trypanosomiasis in the Southern Sudan.**—*Veteran.* **2.** 18-22. **3352**

In large scale trials with native cattle one treatment with dimidium bromide was successful in clearing an area supporting 350,000 head of cattle of trypanosomiasis. Little adverse effect of the drug was reported, although there was some tendency towards photo-sensitization in fat animals. A similar test with single treatments with antrycide the following year was again successful over an area supporting 150,000 head of cattle; no reliable reports of adverse effects were received.—R. MARSHALL.

MADISON, L. L. (1950.) **Comparison of the anterior pituitary-adrenal cortical stimulating effect of U.S.P. epinephrine, synthetic L-epinephrine and nor-epinephrine.**—*J. clin. Invest.* **29.** 789-791. [Author's summary and conclusions copied *verbatim.*] **3353**

The eosinopenic effects of U.S.P. epinephrine, synthetic L-epinephrine, and nor-epinephrine were compared in 15 normal subjects. Another pharmacological difference between the adrenal medullary hormones has been demonstrated. The eosinopenic effect of U.S.P. epinephrine depends on its L-epinephrine content and not on the nor-epinephrine present. Epinephrine is the anterior pituitary-adrenal cortical stimulant, whereas its non-methylated analogue, nor-epinephrine, is devoid of effect.

ADAMSON, D. W., & GREEN, A. F. (1950.) **A new series of analgesics.** [Correspondence.]—*Nature, Lond.* **165.** 122. **3354**

Aminobutenes 3-tertiary-amino-1 : 1-(2'-thienyl)-but-1-enes have potent analgesic properties and in addition have considerable antihistamine, spasmolytic and local anaesthetic activity. In many ways they have analogies with amidone (2-dimethylamino-4, 4-diphenylheptanone); gastro-intestinal disturbances were not observed following administration of these drugs. Their effects were tested on dogs, cats and rodents.—R. MARSHALL.

KIBLER, R. F., & SCHNAPER, H. W. (1950.) **The effect of procaine administered intravenously on the cutaneous pain threshold.**—*Amer. J. med. Sci.* **220.** 199-202. [Authors' summary and conclusions copied *verbatim.*] **3355**

One gram of procaine administered intravenously over a period of 55 to 75 minutes to adult human subjects was ineffective in significantly raising the pain threshold to radiant heat in either normal or traumatized skin.

These results are contrasted with reports of the dramatically effective analgesic action of procaine given intravenously for the control of clinical pain.

Several possible explanations for this discrepancy are advanced. A need is apparent for a critical and objective evaluation of intravenous procaine in pain syndromes.

LESTER, W., JR., KAYE, S., ROBERTSON, O. H., & DUNKLIN, E. W. (1950.) **Factors of importance in the use of triethylene glycol vapor for aerial disinfection.**—*Amer. J. publ. Hlth.* **40.** 813-820. [Part of authors' summary copied *verbatim*.] **3356**

The significance of such factors as relative humidity, temperature, and ventilation in the use of triethylene glycol vapor for aerial disinfection is discussed and the necessity for maintenance of germicidal concentrations in the air of the treated environment is emphasized. Certain features of design applicable to suitable vaporizing units are described and the avoidance of conditions leading to decomposition of liquid triethylene glycol is stressed.

See also absts. **3195** and **3200–3203** (streptomycin); **3199** (PAS); **3208** (thiosemicarbazone in leprosy); **3209** (chemotherapy in swine erysipelas); **3225** (experimental brucellosis in g. pigs); **3233** (aureomycin in tularaemia); **3234** (chloromycetin in tularaemia); **3238** (antihistamines); **3241** (bacteriophage therapy); **3245** (surra); **3246** (blackhead); **3247** (*Plasmodium gallinaceum* infection); **3259** (insulin-sugar in equine encephalomyelitis); **3269** (sinusitis in turkeys); **3283, 3285** and **3286** (insecticides); **3289** and **3290** (gammexane); **3298** and **3299** (filariasis); **3306** (neoplasms); **3439** (book).

PHYSIOLOGY, ANATOMY AND BIOCHEMISTRY

CLARK, R. (1950.) **A review of our present knowledge of factors and drugs influencing ruminal motility.**—*J. S. Afr. vet. med. Ass.* **21.** 49-57. [Abst. from author's summary.] **3357**

The physiology of ruminal motility and the known causes of atony are reviewed. It is emphasised that the rational treatment of ruminal stasis must be based on the recognition and correction of the cause. It is argued that the physical, chemical and biological constitution of the ruminal ingesta must be restored to and maintained at normal so as to allow of active fermentation. The efficacy of certain commonly used drugs with regard to their action on the rumen is discussed.

MAQSOOD, M., & REINEKE, E. P. (1950.) **Influence of environmental temperatures and thyroid status on sexual development in male mouse.**—*Amer. J. Physiol.* **162.** 24-30. [Authors' summary copied *verbatim*.] **3358**

The results obtained in the present experiments indicate that mild hyperthyroidism stimulates while hypothyroidism depresses sexual development in the growing male mouse at environmental temperatures of 24° and 30°C. There was a significant increase in the weights of the testes and seminal vesicles of mice given 0·05 per cent. thyroprotein in the feed for a period of 4 weeks, at 24°C., while higher doses caused a decrease in sex organ weights. Thyroprotein (0·005 per cent.) when fed to mice kept at 30°C. caused a significant increase in the weights of these organs when compared with the control at 30°C. High environmental temperature of 30°C. alone caused a decrease in the weights of testes and seminal vesicles. The weights of testes and seminal vesicles of controls and treated groups, when calculated per gram body weight, were highest in groups fed 0·05 and 0·005 per cent. thyroprotein at environmental temperatures of 24°C. and 30°C. respectively. Administration of thiouracil (0·1 and 0·2 per cent.) in the feed caused a decrease in the weights of the testes and seminal vesicles which was more marked at the high environmental temperature. The decrease in the weight of the seminal vesicles was more marked than that in the testes. Histological studies of the testes and seminal vesicles showed that mild hyperthyroidism stimulated spermatogenic activity in the testes and caused epithelial proliferation of the mucosa of the seminal vesicles, with numerous granules, when compared with the control or hypothyroid male mouse. Hypothyroidism produced by the administration of thiouracil or by keeping the mice at 30°C. caused some atrophic and degenerative changes, with limited spermatogenesis. In thiouracil-treated mice some degree of desquamation and inactivity of the epithelial cells lining the mucosa of seminal vesicles was also observed.

MORENG, R. E., & PHILLIPS, N. E. (1950.) **The effects of various degrees of chilling on mortality and growth of baby chicks.**—*Poult. Sci.* **29.** 310-312. **3359**

During the first three days after hatching chicks withstood exposures at 37°F. for 100 min., but not for longer periods. These observations support the hypothesis that at birth chicks behave as cold blooded animals and that their temperature regulating mechanism is only developed later.—E. EDEN.

ASPLIN, F. D., & BOYLAND, E. (1947.) **The effects of pyrimidine sulphonamide derivatives upon the blood-clotting system and testes of chicks and the breeding capacity of adult fowls.**—*Brit. J. Pharmacol.* **2.** 79-82. **3360**

Sulphamethazine and sulphapyrazine are useful agents in the treatment of coccidiosis in chickens. The authors considered other possible effects of feeding these drugs to chickens. Sulphamethazine tends to produce a condition of hyperplasia, accompanied by premature development of the comb and wattles, in young

cockerels; it lengthens the blood-clotting time, reduces the rate of growth, and causes haemorrhages in the gut. Sulphapyrazine evinced none of these effects. These side-effects are produced by sulphamethazine only when treatment exceeds the recommended period of seven days. Sulphamethazine does not appear to affect the fertility of adult cockerels or the laying capacity of fowls. Hyperplasia of the testes was also observed in young rats treated with sulphamethazine and there was some increase in size of the seminal vesicles and prostate. No effect on the seminal vesicle was observed when the drug was administered to castrated rats.

—C. Horton Smith.

Borst, J. G. G., & de Vries, L. A. (1950). **The three types of "natural" diuresis.**—*Lancet.* **259.** 1-6. [Authors' summary and conclusions copied *verbatim.*] **3361**

Three fundamentally different types of diuresis and their physiological counterparts can be distinguished: (1) Diuresis of water. (2) Diuresis of water plus sodium chloride (extracellular fluid). (3) Diuresis of water plus sodium chloride plus potassium (extracellular plus intracellular fluid). Respectively these are the response to the drinking of water, to an increased cardiac output, and to the change from night to day as part of the diurnal rhythm.

The elimination of water, sodium, chloride, potassium, urea, and creatinine has been studied in eighteen patients receiving, over a total of 500 days, 8 equal amounts of milk daily, given at 3-hourly intervals. During winter the output of water and the three electrolytes was highest from 9 A.M. to 3 P.M. and lowest from 9 P.M. to 6 A.M. The ratio for sodium was 3 to 1; for water and potassium it was 2 to 1. In summer (one case) the peak for water and electrolytes was from 6 A.M. to 9 A.M., and the lowest excretion was from 9 P.M. to 3 A.M. In spring and autumn the pattern of excretion was between the two extremes.

The average excretion of creatinine and urea (corrected for diuresis) is independent of the diurnal rhythm and shows no important fluctuations. This points to a more or less constant glomerular filtration-rate during the 24 hours of the day, the variations of diurnal excretory rhythm being dependent on variations in tubular reabsorption. The available evidence, though inconclusive, points to the same mechanism for the saline diuresis, the glomerular filtration being at least of minor importance.

In a patient with Addison's disease a normal excretory rhythm was found; but the ratio between the output during day and night was only 3 to 2.

The diurnal rhythm may be reversed in cirrhosis of the liver and in moderate heart-failure when the patients are recumbent at night and semirecumbent during the day, so that venous return is reduced. The reversal is especially in excretion of water and sodium chloride.

Parrish, D. B., Wise, G. H., Hughes, J. S., & Atkeson, F. W. (1950.) **Properties of the colostrum of the dairy cow. V. Yield, specific gravity and concentrations of total solids and its various components of colostrum and early milk.**—*J. Dairy Sci.* **33.** 457-465. [Authors' summary copied *verbatim.*] **3362**

A study was made of changes in yields, specific gravity, total solids, fat, solids-not-fat, total proteins, lactose and ash in mammary secretions collected from dairy cows during the transition period from colostrum to normal milk. Considerable variation was found in values for yield and for the properties of early mammary secretions collected from different individuals at the same postpartal period. Fat was the most variable constituent. Variability in secretions from different individuals decreased as transition to normal milk progressed. Yields of mammary secretions increased markedly during the first week postpartum. Specific gravity, total solids, solids-not-fat, total proteins and ash decreased rapidly during the first four to six milkings, but only relatively small decreases were noted throughout the remainder of the 14 days of the study. Lactose changed in approximately an inverse ratio to the aforementioned properties. Based on equal weights of dry matter, milk had an energy value the same as or higher than that of colostrum. Proteins contributed a greater percentage to the total energy value of colostrum than to that of milk, while lactose and fat contributed a greater percentage of energy to milk than to first colostrum. The ratio of ash to total solids was higher in milk than in colostrum.

Balmain, J. H., French, T. H., & Folley, S. J. (1950.) **Stimulation by insulin of *in vitro* fat synthesis by lactating mammary gland slices.** [**Correspondence.**]—*Nature, Lond.* **165.** 807-808. **3363**

Tissue slices of mammary gland of rabbits and rats were kept in solutions of glucose and sodium acetate. Addition of insulin increased the respiratory quotient and acetate utilization. Both these criteria are an indication of an increased fat synthesis. Failure to demonstrate this effect in previous trials is attributed to the insolubility of the insulin under the conditions then used.—E. Eden.

BRAUDE, R., & MITCHELL, K. G. (1950.) **'Let-down' of milk in the sow.** [**Correspondence.**]—*Nature, Lond.* **165.** 937. **3364**

Four gilts were given daily injections of 1-10 units of oxytocin. The higher the dose of this hormone, the larger was the amount of milk released. The length of time of the flow was also increased. From the limited number of estimations, no definite conclusions could be drawn regarding changes in the fat and solids-not-fat content of the milk.—E. EDEN.

REDA, H. (1950.) **Sedimentation rate in sheep.**—*Brit. vet. J.* **106.** 235-239. [Author's conclusions modified.] **3365**

The blood sedimentation rate of sheep was found to be very slow as compared with other mammals. In new-born lambs it was 1 mm./hr.; in yearling sheep, 2 mm./hr.; in two-year-old sheep, 2·5 mm./hr.; in old sheep (3-5 years), 2 mm./hr. In females the rate was almost the same as in males.

Sedimentation rate cannot be used as a pregnancy diagnosis test. In cold weather the sedimentation rate was decreased by an average of 0·5 mm./hr. In cases of mange, there was a slight decrease in the rate of about 0·3 mm./hr. In cases of mastitis, there was an increase of about 1 mm/hr.

COLBY, R. W., LINDLEY, C. E., WARWICK, E. J., & CUNHA, T. J. (1948.) **The effect of chlorobutanol on plasma ascorbic acid levels and semen production in sheep.**—*J. Anim. Sci.* **7.** 191-197. **3366**

Daily feeding of chlorbutanol increased the plasma ascorbic acid of ewes but did not affect the haemoglobin, carotene or vitamin A levels. In rams, no consistent increase in the plasma ascorbic acid value was obtained. Nor did this treatment improve libido or semen quality. A marked increase in the ascorbic acid excretion however was observed.—E. EDEN.

KMENT, A. (1949.) Kaliumbestimmungen im Serum von Haustieren. [**Potassium in the serum of domestic animals.**]—*Wien. tierärztl. Mschr.* **36.** 398-406. **3367**

The phosphotungstic acid precipitation method was used for the determination of potassium. The values obtained in the sera of several species of domestic animals were similar to those published. There was a 20% increase in the serum of cattle two mins. after death, the source of this extra potassium being probably the muscles and the erythrocytes.—E. EDEN.

GRAYSON, J. (1949.) **Reactions of the peripheral circulation to external heat.**—*J. Physiol.* **109.** 53-63. **3368**

It has been observed that vasoconstriction of the skin can occur as a result of a heat stimulus as well as from a cold stimulus. Using a finger plethysmograph, it was found that an increase in skin blood flow occurs when the environmental temperature is raised to 36°C. but between 36° and 40°C. there is a decrease in blood flow. Above 40°C. there is again an increased blood flow as well as a rise of rectal temperature and the onset of sweating.

—J. A. NICHOLSON.

BENZIE, D. (1950.) **Growth of skeleton of the foetal sheep.**—*Brit. vet. J.* **106.** 231-234. [Author's summary copied *verbatim*.] **3369**

Radiographs are presented showing stages in the development of the skeleton of the foetal lamb from the 49th day until full term.

BIGNARDI, C. (1947.) Sulle terminazioni nervose della lissa del cane. [**Nerve-endings in the lyssa of the tongue in dogs.**]—*Clin. vet., Milano.* **70.** 129-131. **3370**

B. described the best methods of demonstrating the motor and sensory nerve endings of the lyssa [not to be confused with rabies], which is a supporting organ of the tongue in many mammals and in dogs has a very complex structure.—B. BALDELLI.

DAVIES, J. (1950.) **The pronephros and the early development of the mesonephros in the duck.**—*J. Anat.* **84.** 95-102. [Author's summary copied *verbatim*.] **3371**

The early development of the excretory system in the duck has been studied. A series of well-developed external glomeruli are formed from the coelomic epithelium. Later, internal glomeruli are formed in the same area and become fused with the external glomeruli.

Sedgwick's account of the development of this part of the avian excretory system is not confirmed.

The early excretory system of the crocodile and turtle is compared with that of the duck and shows striking resemblances. The duck appears in this respect more primitive and reptilian than the chick.

CRAIGE, A. H., JR., JOHNSON, R. B., BLACKBURN, E. G., & COFFIN, J. M. (1949.) **Renal excretion following intravenous injection of calcium salts in the normal cow.**—*Amer. J. vet. Res.* **10.** 217-220. **3372**

Each of four normal cows was given duplicate intravenous injections of calcium [10·5 g. Ca] administered as the chloride, and the borogluconate respectively.

Urine specimens were obtained before injection and at intervals of two hours using vulval bags or retention catheters. Blood samples were also taken before injection and at

intervals of 3, 60, and 120 min. and 24 hours after injection. Urinary concentrations of bicarbonate, calcium, inorganic phosphorus, chloride, ammonia, creatine, creatinine, phenols, and total organic acids were estimated. Urinary pH, and serum concentrations of calcium and inorganic phosphorus were also determined.

Injections of both salts gave an immediate rise in urinary output of calcium and a reduction in urinary output of volatile phenols. After the borogluconate an eight-fold increase in the rate of urine formation occurred, accompanied by decrease in pH. After the chloride, urine formation was less than preinjection rates, and no consistent effect on acidity occurred.

There was an initial rise in Ca concentration in the blood which was similar for the two salts, but this effect was maintained longer after chloride than borogluconate. The authors consider that these differences are caused by undesirable effects of calcium chloride on the circulation of the kidney.

After both types of injection the animals had transient physical disturbances which were more severe when the chloride was used.

—R. J. FITZPATRICK.

HERMAN, H. A., & SPALDING, R. W. (1947.) **A study of factors affecting the length of gestation in dairy cattle.**—*J. Dairy Sci.* **30.** 545-546. [Only abst. given. Abst. from abst.] **3373**

The average length of the gestation period of about 2,000 Jersey, Holstein and Guernsey cows, excluding those in which there were twins and abortions, was 279·4±5·59 days. It was slightly longer in mature cows than in heifers, and was 1-3 days longer in those that calved in autumn and winter than in spring or summer.

—E. EDEN.

KOBRO, M. (1946.) **Investigations of adrenalin concentration in the blood. V. Commentaries on the formation of adrenalin and its physiological mission ("The adrenalin problem").**—*Acta med. scand.* **126.** 97-116. [In English; abst. from author's summary.] **3374**

K. used a quantitative chemical method for the determination of adrenalin in the blood, in a study on the formation and significance of adrenalin under physiological and pathological conditions.

The secretion of adrenalin appears to be continual and is not affected to any visible extent by extraordinary stress (hunger, asphyxiation, excitement or fear). An "emergency function" cannot be proved. The quantities of adrenalin which can be found physiologically in the organism have no traceable effect on the functions of the organs. But through co-operation with other substances in the sympathetic nervous system, the effect of adrenalin can be potentiated or impaired.

The same adrenalin values in the blood can usually be found during states of illness and physiological conditions. In the case of Addison's disease there is a great decrease. In the pathogenesis of various diseases the changes of concentration in the blood seem to be of little importance, but there is a possibility that the effect of adrenalin, also in this case, may be increased or diminished by other conditions.

SEIFTER, J., EHRICH, W. E., & HUDYMA, G. M. (1949.) **Effects of prolonged administration of antithyroid compounds on the thyroid and other endocrine organs of the rat.**—*Arch. Path.* **48.** 536-547. **3375**

Antithyroid compounds, thiouracil and bis-(4-acetoaminophenyl)-selenium-dihydroxide, were fed to rats for varying periods (14 weeks to two years). Hyperplasia of the thyroid and pituitary glands were observed. The adrenal glands were generally atrophic but no changes were noted in the gonads. Adenomas of the pituitary and the adrenal glands were present in some rats.—E. EDEN.

RAMEY, E., GOLDSTEIN, M. S., & LEVINE, R. (1950.) **Mechanism of muscular fatigue in adrenalectomized animals.**—*Amer. J. Physiol.* **162.** 10-16. [Authors' summary and conclusions copied *verbatim.*] **3376**

Isolated abdominal and diaphragm muscles of salt-treated adrenalectomized rats were subjected *in vitro* to stimulation, directly and through the motor nerve, over extended periods in order to determine the time course of fatigue as compared to normal controls. There were no significant differences in the work performance of muscles from normal and adrenalectomized animals, even when such muscle strips were removed after muscular exhaustion was induced *in vivo*. These conclusions are discussed in relation to other work in this field and it is postulated that the well established easy fatigability of the muscles of adrenalectomized animals *in vivo* is probably due to a failure of neuro-circulatory adaptation.

MORGANTI, E. (1947.) Del tratto terminale dei condotti epato-intestinali negli uccelli. [**The bile ducts in birds.**]—*Atti Soc. ital. Sci. vet.* **1.** 28-37. [English summary.] **3377**

M. carried out comparative studies on the anastomosis between the bile ducts and the duodenum in domestic fowls, turkeys, pigeons, geese, and domestic and wild ducks. He states that although there is no real sphincter at the

opening of the bile ducts as in some mammals, there is a kind of cuff formed by the muscular coat of the duodenum.—E.G.

BARRIE, H. J., KLEBANOFF, S. J., & CATES, G. W. (1950.) **Direct medullary arterioles and arteriovenous anastomoses in the arcuate sponges of the kidney.** [**Correspondence.**]—*Lancet*, **258.** 23. **3378**

If the arterioles supplying the smooth muscle of the arcuate arteries are followed, it is found that after some time the walls are composed of loosely attached cells. They are closely invested with a mesh of sinusoids which are lined by a single layer of cells. These sinusoids eventually drain into an arm of one of the big veins. Open communications between the sinusoids and arterioles have been demonstrated and the main function of these structures seems to be to provide an arteriovenous shunt.

—E. EDEN.

See also absts. **3205** (phagocytic action of bone marrow); **3346** (iodine in lactation); **3440** and **3441** (books).

PUBLIC HEALTH, VETERINARY SERVICES AND VETERINARY EDUCATION

NAI, D. D., & GIOLITTI, G. (1947.) Proposta di un nuovo metodo per il risanamento del latte alimentare. [**Making milk safe for human consumption.**]—*Atti Soc. ital. Sci. vet.* **1.** 197-203. [English and French summaries.] **3379**

The authors suggest the use of a 130-volume strength hydrogen peroxide added to milk, excess of the hydrogen peroxide to be destroyed by the addition of catalase.—E.G.

GREATOREX, J. C. (1950.) **A scientific approach to meat inspection.**—*J. R. sanit. Inst.* **70.** 362-372. [Author's summary copied *verbatim*.] **3380**

An attempt has been made in this contribution to exemplify the need in meat inspection for a more scientific approach to the following points: (1) The need for improved methods in resting, fasting and care of animals awaiting slaughter. (2) The provision of adequate facilities for ante-mortem veterinary examination of animals awaiting slaughter, and for the segregation and slaughter in isolation of animals showing clinical signs of disease or ill-health. (3) It is necessary that provision be made not only for adequate laboratory facilities and staff, as essential aids to the scientific execution of meat inspection, but also facilities should be provided for prolonged detention of carcases pending the results of such examination. To be successful, a vigorous research campaign should be instituted so as to reduce to a minimum the time required to determine the presence or otherwise of pathogenic organisms in detained meat. (4) The significance of lesions of tuberculosis in a carcase should be re-examined in the light of recent research on that disease. (5) The institution of a carefully planned system of co-operation between the meat inspector and the field veterinary officer would enable the findings observed in the abattoir to be used for purposes of controlling diseases of both man and animals.

PULLINGER, E. J. (1950.) **The condemnation of calves at Johannesburg abattoir with special reference to calf paratyphoid.**—*J. S. Afr. vet. med. Ass.* **21.** 58-64. [Author's summary copied *verbatim*.] **3381**

The main causes for condemning calf carcases at Johannesburg abattoir are listed. The majority of condemnations (i.e. from 51 to 76 per cent.) are due to the avoidable causes of emaciation, immaturity and bruising. From 7 to 14 per cent. of all condemnations are for enteritis and fever, and of these, 18 per cent. were found to be due to Salmonella infection. Of a group of 100 apparently normal calves, 3 per cent. were found to be carrying Salmonella in the intestinal tract at the time of slaughter. It is recommended that all calves showing even the slightest trace of enteritis or fever should be seized and the carcases and offal condemned.

ANON. (1947.) **Epithelioma of the eye ("cancer eye") in cattle, cause for carcass condemnation.**—*J. Amer. vet. med. Ass.* **111.** 384-385. **3382**

U.S. Department of Agriculture regulations require the total condemnation of the carcass if there is an epithelioma of the eye that is suppurative, necrotic and obscures the eye, or if there is cachexia; also if there is metastasis or the bones of the skull are infected. In other cases, the head alone is condemned.

—R. MACGREGOR.

ANON. (1950.) **The bruising of slaughter stock in transit. How to minimise cruelty and losses.**—*Fmg. S. Afr.* **25.** 114-118. **3383**

Causes of bruising are: sharp edges and projecting bolts in trucks and pens; slippery floors; horning, largely due to hustling the animals, but also to the practice of mixing consignments especially when this involves mixing of cattle of different size and strength; trampling of cattle on others that are recumbent

from fatigue or poor health; sudden stopping and shunting of the trucks.—R. MACGREGOR.

MYERS, J. A. (1949.) **The contribution of the veterinary profession to public health.**—*Proc. 18th Ann. Conf. Veterinarians, Ohio.* pp. 63-81. **3384**

Veterinary lectures were first given in Philadelphia in 1846 and a veterinary college established in 1852, but it did not survive. The first successful Veterinary school in North America was the Ontario Veterinary College, established in 1862. In 1894 the first law regulating veterinary practice in Ohio was passed, but since then the registers have been "opened" four times to admit unqualified practitioners.—R. MACGREGOR.

I & II. ANON. (1949.) [**The three-year veterinary plan.**]—*Veterinariya, Moscow.* **26.** No. 6. pp. 1-4; and No. 7. pp. 1-3. **3385**

III. MUROMTSEV, S. N. (1949.) [**Future tasks in animal hygiene.**]—*Ibid.* No. 7. p. 4. **3386**

I, II & III. The unsatisfactory state of animal husbandry has been officially recognized and through the 1949-51 plan it is intended to reorganize the veterinary services, as well as to improve stockbreeding and practical animal management. The number of cattle is to be increased to 34 million, with a considerable parallel improvement in quality and productiveness, while the ratios of increase for sheep, pigs and fowls are to exceed that for cattle. The plan provides for an increase of veterinary centres to 25,000 by 1952. Future foundations of stockbreeding must be laid on the basis of animal health. The principles to be followed are based on those of Michurin and Lyssenko. In order to reduce the very heavy mortality and sterility in farm stock, rules for future competent practical management are listed together with comments on the present numerous imperfections and a statement of the percentages of deaths from various causes. The inadequacy of research work is also commented upon. Much emphasis is placed on the need for administrative improvements; the head of each centre must in future be not only a veterinary specialist but also an experienced administrator, with a better qualified staff under him than hitherto. Honours and pensions are promised as an inducement. [See also *V.B.* **20**. 558].—F.A.A.

See also absts. **3221** (*Salmonella* in eggs); **3431** (report, S. Africa).

LIVESTOCK HYGIENE

SCHRENK, H. H., HEIMANN, H., CLAYTON, G. D., GAFAFER, W. M., & WEXLER, H. (1949.) **Air pollution in Donora, Pa. Epidemiology of the unusual smog episode of October, 1948. Preliminary report.**—*Publ. Hlth. Bull., Wash.* No. 306. pp. 1-173. **3387**

During the last week of October, 1948, a heavy "smog" [a combination of smoke and fog] settled down over the area surrounding Donora, Pa. Meteorologists described it as a temperature inversion and anti-cyclonic conditions characterized by little or no air movement, prevailing over a wide area encompassing western Pennsylvania, eastern Ohio and parts of Maryland and Virginia. This prolonged state of atmosphere was accompanied by fog and permitted the accumulation of atmospheric contaminants resulting in dense smog, particularly in highly industrialized areas. Smogs of short duration are not unusual and except for discomfort due to irritation and nuisance of the dirt and poor visibility, no unusual significance is attached to such occurrences.

At first no special notice was taken of the smog, the subject of this report, which encompassed the area during Wednesday, October 27th, and over the Thursday, the 28th. On the Friday an increase in illness occurred, but it was only on the Saturday morning that the first death took place and by 11.30 p.m. 17 people had died, two more deaths took places on the following day and one a week later, making twenty deaths in all.

The report is chiefly of human interest and covers the vast enquiry the Public Health Service made on the outbreak. A study was also made by a veterinarian on the effect on animals kept in the affected area. From the data presented it is apparent that the domestic animal population was affected by the smog to the extent that an appreciable number became ill and that some died. The incidence of illness appeared to vary with the animal species, dogs being apparently most susceptible, both as to morbidity and mortality

The syndrome as observed among animals was of a nature which could be attributed to an irritant of the exposed mucous membranes, particularly those of the respiratory tract. The incidence in dogs was 15·5%. Mortality among affected dogs was 26·3%. The role played by distemper in the high incidence of morbidity and mortality among dogs appeared to be considerable, but it was not possible to measure

its importance. The economic loss due to smog effects on farm animals was minimal.

The general report is illustrated by photographs and diagrams.—D. S. Rabagliati.

Southgate, B. A., et al. (1950.) **Biological aspects of river pollution.**—*Advanc. Sci.* **7.** No. 25. pp. 85-89. **3388**

The authors discussed the general problems of river pollution. Sewage may contain organic matter; this is oxidised by bacteria and the resultant lack of oxygen in the water is one of the most important factors in reducing the fauna and flora of the river. Industrial sewage, on the other hand, may contain metallic ions which are directly toxic to living matter. The effects of pollution on fauna and flora were dealt with and special problems of contamination with zinc and lead sulphates were discussed, mentioning the success of various preventive measures.—E. Eden.

REPRODUCTION AND REPRODUCTIVE DISORDERS

Götze, R. (1949.) Tierärztliches Hilfspersonal und Fachtierärzte für Besamung und Unfruchtbarkeit. [**Veterinary assistants and specialists to deal with artificial insemination and sterility.**]—*Dtsch. tierärztl. Wschr.* **56.** 3-6. **3389**

The main conclusion reached in this detailed study is that the extent to which artificial insemination can be left in the hands of auxiliary personnel is determined by the incidence of infertility in any given species of domestic animal.—G. P. Marshall.

Froehner, H. (1950.) Des gesetzliche Regelung der künstlichen Besamung im Lande Niedersachsen. [**The law on artificial insemination in Lower Saxony.**]—*Dtsch. tierärztl. Wschr.* **57.** 76-79. **3390**

A law introduced in 1949 regulates artificial insemination. All male animals used are licensed. Inseminators, whether veterinarians or lay persons, must have special training in their subject. Regulations controlling insemination in other countries are mentioned.

—Roy Mack.

Winkler, K. H. (1949.) Über die künstliche Besamung in den U.d.S.S.R., unter besonderer Berücksichtigung des russischen Modells der künstlichen Scheide, sowie allgemeiner Tierzuchtfragen. [**Artificial insemination, apparatus and breeding in the Soviet Union.**]—*Tierärztl. Umsch.* **4.** 345-347. **3391**

W. records the impressions he gained as a veterinarian during his captivity in the U.S.S.R. Apart from commenting on certain peculiarities of the Russian system of horse breeding, he concentrates on the technique of artificial insemination, particularly on the type of artificial vagina used there, and on what he considers to be its advantages over other models (simplicity, pneumatic inner tube, unbreakable semen container).—G. P. Marshall.

Brochart, M., & Lucas, A. (1950.) Contrôle sanitaire des taureaux dans le cadre de l'insémination artificielle. [**Control of disease in bulls used for artificial insemination.**]—*Rec. Méd. vét.* **126.** 280-307. **3392**

The major part of this paper is based on a representative but incomplete review of literature, incorporating 30 references. To the end of 1949 in France, 250 bulls had been used to produce 300,000 artificial insemination calves. A systematic disease control system is now being instituted by a central A.I. laboratory at Alfort, in conjunction with the national diagnostic laboratory. The control would appear to be on no compulsory basis. Very few centres have invited any laboratory co-operation in disease control, and in practice there is often none at all. The law is very vague about requirements, demanding only isolation of animals in centres and inspection every six months. Much space is devoted to the avoidance of the perpetuation of congenital inherited defects, and the hereditary tendency to relative infertility, as established by Lagerlöf, *et al.*, is stressed. A 45% conception rate is suggested as the bedrock economic minimum. The diagnosis of brucellosis is discussed in detail, emphasis being laid on the importance of seminal fluid agglutinins, which appear early. Trichomoniasis receives much space also, without however any reference to British or to recent American research developments. *Vibrio fetus* infection receives a bare mention. Non-specific microbial infertility is stressed; on this subject the authors' literary review is valuable, but they can make as yet no practical suggestions of much value for diagnosis. Semen sample evaluation is discussed chiefly in the light of Anderson's work.

The interim report of the authors' original work occupies the terminal third of the paper. They claim to have recognized dead trichomonads sufficiently clearly to constitute a definite diagnosis. Results of a preliminary experiment on control bulls led them to discontinue routine performance of the catalase test, and the counting and identification of seminal bacteria. For 12 bulls, some correlation

was established between fertilizing power, good motility, low pH, and infrequency of abnormal spermatozoa. It was thought that bent tail abnormalities might be due to variations in composition of seminal plasma. Eight bulls produced "abnormal" and four "suspicious" semen samples, chiefly on the criterion of sperm morphology. No brucellosis or trichomoniasis was diagnosed in a field series of 92 artificial insemination bulls. One bull yielding normal-looking semen had a conception rate of only 3%; the cows on which another such bull was used commonly aborted at about five months, the culture findings proving insignificant.—F. L. M. Dawson.

Easley, G. T. (1949.) **Why cows fail to conceive when bred by artificial insemination.**—*Vet. Med.* **44.** 455-459. **3393**

Various factors affecting conception such as health, season and breed are discussed. The importance of exercise and the proper excitement of the bull and the number of ejaculates collected are also mentioned. The best ways of collecting and preserving semen are described. Intrauterine insemination gave a higher conception rate than vaginal or cervical insemination. The last section deals with factors related only to the cow which may decrease the conception rate.—E. Eden.

I. Dunn, H. O., & Bratton, R. W. (1950.) **Motility of bovine spermatozoa in buffered whole egg.**—*J. Dairy Sci.* **33.** 430-433. **3394**

II. Dunn, H. O., Bratton, R. W., & Collins, W. J. (1950.) **Fertility and motility of bovine spermatozoa in buffered whole egg extenders.**—*Ibid.* 434-437. [Authors' summaries copied *verbatim.*] **3395**

I. Spermatozoan motility at 5°C. was as satisfactory in extenders composed of three parts of a 2·9 per cent. sodium citrate dihydrate buffer containing 0·4 per cent. of succinylsulfathiazole or 0·4 per cent. succinylsulfanilamide and one part of liquid whole egg as in the standard 2·9 per cent. citrate-sulfanilamide-yolk extender.

The costs of the whole egg extenders were approximately 25 per cent. of that of the yolk extender. The former could be prepared more quickly and glassware coming in contact with them was much easier to clean. The spermatozoa were more visible and more active in the whole egg extenders, thereby facilitating microscopic examinations.

II. By means of the split sample technique, comparisons were made between the standard 2·9 and 3·6 per cent. citrate-sulfanilamide-yolk extenders and whole egg extenders composed of three parts of either a 1·9 or a 2·9 per cent. citrate buffer, containing 400 mg. per cent. of succinylsulfathiazole and one part of blended liquid whole egg (yolk + albumen).

On the basis of approximately 11,000 first- and second-service cows inseminated artifically with each of these two types of extenders, the 60- to 90-day non-returns averaged 62·3 per cent. for the citrate-sulfanilamide-yolk formulae and 61·6 per cent. for the citrate-succinylsulfathiazole-whole egg formulae. Spermatozoan motility was satisfactory in both types of extenders.

Stone, E. J., Johnston, J. E., & Mixner, J. P. (1950.) **Live spermatozoa relationships and fertility of dairy bull semen.**—*J. Dairy Sci.* **33.** 442-448. [Authors' summary copied *verbatim.*] **3396**

The technique of differential staining of live and dead spermatozoa was utilized in this study to determine the relationship of the initial percentage of live spermatozoa in semen samples, as well as the percentage of spermatozoa in diluted semen surviving a 0°C. temperature for 10 min., to other semen characters and fertility. Data on 236 semen samples from 19 bulls, including 81 samples from 14 bulls on which fertility data were based, were used in this study. An analysis of variance of the data for the various semen characters indicated that highly significant differences existed among the bulls in regard to these semen characters. A correlation analysis was presented on a "total", "between" and "within bull" basis, but only the analysis on a "between bull" basis had coefficients of correlation sufficiently high to have any prediction value. A multiple coefficient of correlation of + 0·69 [representing significance at the 5% point] of fertility with spermatozoa concentration and the percentage of spermatozoa surviving a 0°C. cold shock was obtained. A partial regression equation involving these factors was presented.

Smith, A. U., & Polge, C. (1950.) **Storage of bull spermatozoa at low temperatures.**—*Vet. Rec.* **62.** 115-116. **3397**

Sealed ampoules of bull or goat semen containing 15% glycerol were cooled in 14 stages of 2·5 min. each; there was undiminished motility of the spermatozoa when thawed after cooling for 24 hours at —79°C. If this treatment does not adversely affect the fertilization power of the semen, it may be possible to store spermatozoa satisfactorily for very long periods. Observations on using other temperatures and diluents are also reported.—E. Eden.

Johnston, J. E., & Mixner, J. P. (1948.) **Development of hyaluronidase in bull semen.**—*J. Anim. Sci.* **7.** 441-446. **3398**

As fertility may be dependant on the hyaluronidase content of the semen, various factors affecting the concentration of this enzyme were studied. The first increase during an incubation at 37°C. for 24 hours was mainly caused by the spermatozoa, whereas a later increase on subsequent incubation is considered to have been caused by the presence of bacteria and could be controlled by the addition of toluene.—E. Eden.

Emik, L. O., & Sidwell, G. M. (1947.) **Factors affecting the estimation of concentration of sperm in ram's semen by the photo-electrometric method.**—*J. Anim. Sci.* **6.** 467-475. **3399**

Among the diluting fluids tested, chlorazene proved to be best in dissolving clumps which were prevalent in rams' semen. A dilution of 1 : 200 gave the best range for readings. A method for estimating the amount of debris which interfered with the readings is described. The type of diluting pipettes used, provided that they were rinsed, did not affect the results. The magnitude of errors at each stage was also reported.—E. Eden.

Fuller, L. W. (1950.) **Superovulation in the cow.**—*Vet. Rec.* **62.** 291. **3400**

A cow was treated for anoestrus by intramuscular injections of oestrogens. It was served in error, became pregnant and produced a dead calf at seven and a half months; this was followed by another calf which died soon after birth. Three more living calves were removed the next day; subsequent progress of the cow and of these three calves was satisfactory. —E. Eden.

Chang, M. C. (1950.) **Transplantation of rabbit blastocysts at late stage: probability of normal development and viability at low temperature.**—*Science* **111.** 544-545. **3401**

Nearly half of all the blastocysts removed from rabbits six days after mating and transplanted into the uterus of other rabbits developed into normal young. The effect of storage of blastocysts at various temperatures is also described. The study of the transfer of blastocysts from uterus to uterus in farm animals is advocated.—E. Eden.

Sawyer, C. H., & Markee, J. E. (1950.) **The differential mechanisms by which picrotoxin and copper acetate induce ovulation in the rabbit.**—*Endocrinology* **46.** 177-190. [Authors' summary and conclusions copied *verbatim*.] **3402**

A study of the mechanisms by which picrotoxin and copper salts induce ovulation in the rabbit introduces evidence that, whereas picrotoxin definitely functions by way of the nervous system, at least a large part of the copper stimulus is exerted directly on hypophyseal cells.

Picrotoxin-induced ovulation was always preceded by convulsions; in their absence pituitary activation failed to occur. Reduced dosages of picrotoxin led to extremely severe convulsions in rabbits previously treated with Dibenamine or atropine, but ovulation followed in only one case in 10 animals so treated. These results are interpreted as evidence that the nervous stimulus was generally blocked from reaching the hypophysis. Nembutal in anesthetic doses blocked the convulsive and pituitary-stimulating actions of doses of picrotoxin 2 to 4 times the minimal stimulating level.

Ovulation was induced by copper acetate in dosage which produced no overt signs of nervous stimulation. The copper stimulus to ovulation was blocked by neither the anti-adrenergic, the anti-cholinergic nor the anti-convulsive agent. Finally, pituitary activation was achieved by injecting tiny amounts of copper acetate directly into the adenohypophysis.

Preliminary treatment with estrogen facilitates both neurogenically and copper-induced ovulation. It is suggested that the steroid acts at the hypophyseal level by lowering thresholds to both neurohumoral and direct chemical stimulation.

Trum, B. F. (1950.) **The estrous cycle of the mare.**—*Cornell Vet.* **40.** 17-23. **3403**

A statistical report of 1,543 oestrous cycles. Figures are given for oestrus, foal-heat, inter-oestrus, time of ovulation, and gestation periods. About 50% of oestrous periods may be missed if teasing is done only on specific days after the last service. Two or more services by the stallion produced 3% more pregnancies per oestrous cycle.—Roy Mack.

Vicard, A. (1950.) Stérilité de la vache. [**Sterility in cows.**]—*Rec. Méd. vét.* **126.** 268-279. **3404**

This paper shows a lack of contact with world developments in the field discussed. Its greater part is devoted to "persistence of the corpus luteum", but the phenomenon of suboestrus or silent heat is not mentioned: it seems probable that this condition was often present in the cases visited. Serial visits to individual cases were few in number and not closely spaced in time. The author claims to have observed persistent corpus luteum accompanied by regular oestrus, but gives no data. He alleges that where a retained corpus accompanies a pyometra, the latter is always of the

post-conceptionem variety. The assertion is made that progesterone injections, dose unspecified, given early in oestrus have cured infertility. In the author's area, cystic ovaries are often associated with genital TB. He is convinced that malnutrition is often manifested in the first place by various degrees of luteinization failure, and considers that good results sometimes follow the addition of bonemeal and trace elements to the ration. Cases of early cystic disease have been "successfully treated" with oestrogens. Ovulation during early pregnancy, and consequently superfoetation upon service, have been repeatedly observed.
—F. L. M. Dawson.

Garm, O. (1949.) **A study on bovine nymphomania.**—*Acta Endocrinol.* Suppl. No. 3, pp. 144. **3405**

Extensive histological and some chemical studies are reported. Nymphomania is a type of cystic ovarian degeneration which generally occurs during the second or third month of pregnancy. The importance of heredity, diet and infection in the aetiology of this disease are discussed. An inherited imbalance of the endocrine system seems to be an important predisposing factor. The primary dysfunction is an overactivity of the pituitary, and this in its turn affects the other glands of the body.
—E. Eden.

Bosmans, P. (1949.) Behandeling van Steriliteit ten gevolge van Hormonale Stoornissen bij Merriën. [**Treatment of sterility resulting from hormonal disturbances in mares.**]—*Vlaam. Diergeneesk. Tijdschr.* **18.** 131-134. [English, French and German summaries. Abst. from English summary.] **3406**

Sterility-treatment of about 40 mares is described: 95% of them were served by the same stallion. Metritis was treated with 0·5-1% Lugol solution or with 200,000 U. of penicillin. Abnormally long oestrus was treated with four different drugs; vitamin E, hormovilan, pregnyl, iodinated casein. Ten of 21 mares became pregnant.

Berthelon, M. (1950.) Hypophosphorose et reproduction de la jument. [**Hypophosphorosis and reproduction in the mare.**]—*Rev. Méd. vét., Lyon et Toulouse,* **101.** 1-6. **3407**

B. considers deficiency of calcium and phosphorus in the soil to be a cause of infertility, abortion, and still births in mares.—Roy Mack.

Dózsa, L. (1950.) Ein seltener Fall von primärer Bauchhöhlengravidität bei der Katze. [**Abdominal pregnancy in a cat.**]—*Schweiz. Arch. Tierheilk.* **92.** 106-110. [English, French, and Italian summaries.] **3408**

Two weeks after apparently normal parturition, laparotomy revealed three dead foetuses in the abdominal cavity. There was no breach in continuity of the horns or body of the uterus.—Roy Mack.

Drieux, H., Priouzeau, M., Thiéry, G., & Priouzeau, M. -L. (1950.) Hypotrichose congénitale avec anodontie, acérie et macroglossie chez le veau. [**Hypotrichosis with anodontia: sex linked recessive condition in cattle.**]—*Rec. Méd. vét.* **126.** 385-399. **3409**

Three bull calves were studied, the offspring of two cross-bred indigenous cows, one the daughter of the other, and served by the same bull. In all cases skin was present all over the body, but the animals were completely hairless at birth. A sparse growth of hair developed at ten weeks in the calf that was allowed to survive longest. Teeth were largely or entirely absent and the tongue was too large to be contained within the buccal cavity. There was a careful histological study of endocrine organs and some other structures. Reasons are given for considering that although probably the gene responsible lies on the X sex chromosome, the characteristics are transmissible only to male calves.—F. L. M. Dawson.

Bieliński, K. (1946.) O letalności szirasowego umaszczenia karakułów. [**Lethal shirazi colour in Karakul sheep.**]—*Przegl. hodowl.* **14.** 113-114. [Abst. in *Anim. Breed. Abstr.* **15.** 181. (1947), copied *verbatim.* Signed: T. Janikowski.] **3410**

Numerical observations point to the probability of a lethal gene connected with the grey colour in homozygotes. The material effect of the lethal gene can be seen in pathological changes of the gut (ulcers, hyperaemia of the mucous membrane) which appear at the age of 11-13 wks. and are followed by decline and finally by death of the animal in 4-15 wks. or longer.

See also absts. **3338** (rupture of gastrocnemius tendon in fowls); **3442** (book, animal obstetrics); **3443** (book, embryotomy).

ZOOTECHNY

Hammond, J. (1950.) **Polled cattle.**—*Endeavour.* **9.** 85-90. **3411**

The advantages of polled or hornless cattle are discussed. The best method for producing this type of animal is by selective breeding. Dominant mutations for polled cattle occur about 1 : 50,000. These mutations should be preserved, and by cross-breeding it should be

possible to obtain polled cattle of any required breed. The various polled breeds (such as Aberdeen Angus and Red Poll) already in existence in Great Britain and other countries are also discussed.—E. Eden.

Cook, C. W., Harris, L. E., & Stoddart, L. A. (1948.) **Measuring the nutritive content of a foraging sheep's diet under range conditions.**—*J. Anim. Sci.* **7.** 170-180. **3412**

The nutritional contents of range diets were determined by taking representative samples of the various forage plants before and after grazing. Both sets were chemically analysed and the difference was considered to be an indication of what the sheep ate.

It was found that these animals were highly selective; they consumed large leaves and tender stems in preference to fibrous material. Consequently a much better quality of forage was actually eaten than chemical analysis of a bulked sample would have indicated.—E. Eden.

See also absts. **3320** (pastures); **3330** (grazing new leys).

TECHNIQUE AND APPARATUS

Mullahy, M. E. (1950.) **Detection of acid-fast bacilli. Use of sodium hydroxide and trisodium phosphate as digestants in preparing specimens.**—*Amer. J. clin. Path.* **20.** 672-677. [Author's summary copied *verbatim*.] **3413**

In securing positive results by smears from concentrated specimens, the TSP [trisodium phosphate] method appears superior to the sodium hydroxide. This fact is supported in other studies of concentration methods for smear examination. All types of specimen followed this rule except the gastric washings, in which more positive smears were obtained after sodium hydroxide digestion.

TSP is convenient to use because the period for its action is not limited to a maximum of one or two hours, as in the case of sodium hydroxide. The greatest difficulty with the TSP procedure is that caused by contamination. As far as can be determined, seasonal variation does not change the problem. If this major difficulty could be eliminated, TSP would be a valuable aid to laboratory workers.

Roberts, E. G., Wallace, J. L., & Erlich, H. (1950.) **Methods for isolating tubercle bacilli.**—*Amer. Rev. Tuberc.* **61.** 563-568. [Spanish summary. English summary slightly modified.] **3414**

Four media: ATS, Petrick's, Herrold's with penicillin, and Herrold's without penicillin have been compared with Dubos albumin agar (oleic acid) medium. It appears that the latter is superior to the above media for purposes of diagnostic culture of tubercle bacilli. Dubos (liquid) medium as well as Dubos (solid) medium have been compared with the guinea pig inoculation method. It appears that Dubos (solid and liquid) media are somewhat superior to guinea pig inoculations with very low concentration of tubercle bacilli.

Hurwitz, C., & Silverman, M. (1950.) **Measurement of growth of tubercle bacilli by means of a spectrophotometer.** *Amer. Rev. Tuberc.* **62.** 87-90. [Spanish summary. Authors' English summary copied *verbatim*.] **3415**

A photometric method has been described for the determination of dry weight of tubercle bacilli grown in Tween 80-albumin medium. The method, which has a probable error of ±0·4 per cent. transmission, is applicable to measurements of rate of growth and total growth of tubercle bacilli.

Wise, W. S. (1950.) **Aeration of culture media. [Correspondence.]**—*Nature, Lond.* **165.** 249. **3416**

The rate at which oxygen is available for consumption by an organism is generally limited by the rate at which oxygen dissolves in the liquid phase. This was affected by the shape and size of the vessel; it was proportional to the rate of air flow and was greatly increased by stirring the liquid. Below certain concentrations of oxygen this maximum rate at which oxygen dissolves became the limiting factor in the production of antibiotics.—E. Eden.

Roberts, F. H. S., & O'Sullivan, P. J. (1950.) **Methods for egg counts and larval cultures for strongyles infesting the gastro-intestinal tract of cattle.**—*Aust. J. agric. Res.* **1.** 99-102. **3417**

Extension of studies on helminth parasitism of cattle has necessitated the development of new, and the modification of older, techniques.

The method used for counting strongyle eggs was a modification of the technique described by Gordon & Whitlock [*V.B.* **10.** 217] and Whitlock [*V.B.* **20.** 397]. A dilution counting method is used. A sample of 3 g. faeces is broken down by soaking in 17 ml. water; 40 ml. saturated brine are added and the mixture shaken up with lead shot. A sample is withdrawn in a wide-mouthed pipette and allowed to flow into a counting chamber which measures a volume of 0·5 ml. Four chambers

on a single slide are filled and the total number of ova counted is multiplied by 10 to give the number per g. in the original faecal sample.

If there is to be a delay of some days between collection of faeces and the examination, development of the eggs can be prevented by completely filling a screw-top jar and applying an air-tight lid. Samples kept for periods up to 12 days yielded satisfactory cultures for identification of third stage larvae when made by the method described below.

Faecal cultures were made by mixing 30-40 g. faeces with a quantity of dried sterile cattle faeces. This material is prepared by collecting dried pads of adult-cattle dung from the pasture, breaking up and drying in the sun for a few days, and then exposing to a temperature of 140°C. for 3-4 hours. Finally the material is ground in a meat mincer and stored. The amount added to fresh faeces in the preparation of a culture varies according to the nature of the faeces. Sufficient is used to make a spongy mixture, moist and crumbly and without lumps. Mixing is done by hand. The mixture is placed to a depth of 2-2½ inches in a wide-mouthed screw-top jar with a loose-fitting lid. After incubation for eight days at 26-28°C. the jar is placed in diffused light for half an hour and the larvae are washed from the sides. The jar is finally completely filled with water and inverted into a petri dish which is half-filled with water. This modified "Baermann apparatus" is left overnight. Larvae migrate into the water in the petri dish and may be drawn off and added to those washed from the walls of the jar. The larvae are killed by adding a drop of dilute iodine solution before a differential species count is made.

—H. McL. Gordon.

Webb, M. (1950.) **Gram staining reaction for micro-organisms.**—*Research, Lond.* **3.** 113-120. **3418**

The Gram-complex responsible for Gram-positive staining is probably situated between the cell membrane and the cell wall and it is composed of magnesium ribonucleate linked with polysaccharides and proteins. Changes of this complex during partial autolysis, of the type which produces Gram-negative staining forms, are described. In conjunction with the bacterial capsule, this complex is also concerned with immunological reactions of pneumococci.

Gram-positive bacteria are nutritionally more exacting than Gram-negative; not only is their magnesium requirement larger, but they also need to have several of the amino acids pre-formed in the media for satisfactory growth. These conditions however make them more vulnerable to the attack of antibacterial agents. The actions of penicillin and of other chemotherapeutic agents are discussed.—E. Eden.

Pratt, R., & Dufrenoy, J. (1948.) **Triphenyltetrazolium chloride, a valuable reagent in stain technology.**—*Stain Tech.* **23.** 137-141. **3419**

This dye is reduced by dehydrogenase systems to an insoluble red compound and can therefore be used to locate these systems in sections or on bacterial plates. With this help the authors consider that penicillin assays could be shortened to three hours.—E. Eden.

Isenberg, H. D. (1948.) **Simplified method for staining spermatozoa.**—*Amer. J. clin. Path.* **18.** 94. **3420**

A modified method of Meaker's staining is described. This consists of preliminary washing and centrifuging with sodium bicarbonate and saline. Then the smear obtained is stained with alcoholic carbol-fuchsine and methylene blue. It is claimed that morphological variations can be better observed when using this method than that of Gram or Wright.—E. Eden.

Spinks, A. (1949.) **The estimation of some thiosemicarbazones and their blood concentrations in experimental animals.**—*Brit. J. Pharmacol.* **4.** 254-259. [Author's summary copied *verbatim*.] **3421**

Spectrophotometric methods of estimating the thiosemicarbazones (6057, 6082, and 8388 respectively) of *p*-anisaldehyde, *p*-hydroxybenzaldehyde and *p*-ethylsulphonylbenzaldehyde have been devised. 6057 and 6082 are rapidly eliminated and attain only low blood or plasma concentrations in mouse and rabbit. 8388 is highly persistent and attains high blood concentrations. Only traces of 6057 and 6082 appear in rabbit urine. They are probably almost completly metabolized by the rabbit. 8388 is excreted unchanged in larger, but not theoretical, amounts. The bearing of these results on the antituberculous activity of this group of compounds has been discussed.

De Gowin, E. L., Sheets, R. F., & Hamilton, H. E. (1950.) **Studies with inagglutinable erythrocyte counts. I. A method for measurement of net gain or deficit of red cells in the human subjects.**—*J. clin. Invest.* **29.** 693-713. [Authors' summary copied *verbatim*.] **3422**

Refinements in the procedure for the counting of inagglutinable cells after transfusion to a recipient have been described and their error of estimate computed.

A method is described for the measurement of the net gain or deficit of the recipient's cells

during a prolonged period of study. This depends on the transfusion to the subject of erythrocytes of heterologous group. The rate of loss from the body of the transfused cells is determined by repeated counts of the inagglutinable cells by a modification of the Ashby technique. When the rate of disappearance of the transfused cells is found to be rectilinear the inagglutinable erythrocytes can be employed as biologically tagged cells. Any departure from the expected proportion of recipient's to donor's cells can be measured by making counts of total cells and inagglutinable cells. Equations have been developed for computing the expected recipient's cell count at any time during the study. A significant discrepancy between the expected count and the observed count can be used as a measure of the net gain or deficit of the recipient's cells. Examples of the clinical application of this method are presented.

Proof is presented for the fact that the total cell counts and the inagglutinable cell counts are modified by changes in plasma volume. The inagglutinable cell counts are also modified by net gains or deficits of the recipient's red cells.

MACLAGAN, N. F. (1948.) **Flocculation tests: chemical and clinical significance.**—*Brit. med. J.* Nov. 20th. 892-896. **3423**

About ten different flocculation tests are compared with electrophoretic measurements of serum protein. All these tests are similar in mechanism and are influenced positively by a relative increase of γ-globulin. Hence they are useful for testing for hepatic dysfunction or antibody formation. The relative merits and disadvantages of the various tests are discussed. —E. EDEN.

SMITH, H. (1950.) **The virulence-enhancing factor of mucins. I. A biological assay of virulence-enhancing activity.**—*Biochem. J.* **46.** 352-356. [Author's summary copied *verbatim*.] **3424**

A biological technique has been established for the assay of the virulence-enhancing factor of mucins and chemical fractions thereof. Unknown mucin samples are compared with a 'standard' mucin preparation. A constant number of *Bacterium typhosum* (strain Ty_2) is injected intraperitoneally into batches of twenty mice in the presence of falling concentrations of the test materials. Comparisons of death rates and concentrations are made by probit analysis. The assay can detect twofold differences in virulence-enhancing activity with probability $P=0{\cdot}95$. The toxicity of mucin preparations at high concentrations is noted.

ALLISON, A. C., & CHACKO, L. (1949.) **The use of a camera lucida for micrometry and counts of nerve fibres and other small objects.**—*J. R. micr. Soc.* Ser. 3, **69.** 18-19. [Abst. in *Rev. appl. Mycol.* **28.** 230. (1949), copied *verbatim*.] **3425**

A method has been devised by which measurements of the diameter of very small fibres or similar small objects can be made. A large scale, with lines the thickness of which is graded according to the objects to be measured, is reduced photographically, and the lines measured accurately under low power. It is then calibrated under the camera lucida by marking the position of the stage micrometer divisions as seen with an oil-immersion objective. In use the image of the end of one of the lines is matched against the object to be measured. In this way it is possible to estimate, with a fair degree of accuracy, the size of objects as small as 0·2μ.

In estimating numbers a square subdivided into smaller squares may be used at the same time in order to divide the microscopical field into sections. The number of objects in each small square can be counted directly, if their number is sufficiently small, or the position of each lightly marked in pencil and the marks counted later.

ANON. (1948.) **Synthetic detergents on file.** —*Soap & Sanit. Chem.* **24.** 39-40. **3426**

A new approach to the correlating of information on surface-active agents is the use of the "keysort" system for filing technical data. The system makes use of a file of cards containing such pertinent data as trade-name, chemical character, properties and description, price, recognized applications and suggestions for possible use.—W. MOORE.

See also absts. **3222** (bactericidal test in brucellosis); **3223** (ring test); **3250** (rabies virus cultivation); **3391** (artificial insemination apparatus).

MISCELLANEOUS

BOCQUET. (1948/49). L'arme atomique. [**The atom bomb.**]—*Rev. vét. milit.* **3.** 349-376 & **4,** pp. 9-84. **3427**

This is a detailed account of atomic energy purely from the military point of view.

The three chief effects of an atom bomb explosion are blast, flash and radiations, chiefly γ-rays and neutrons. Clinically blast is characterized by capillary haemorrhages and may be generalized with immediate death or localized

affecting particularly the abdomino-thoracic region with pulmonary lesions, the auditory or the cerebral regions. It is always accompanied by shock. A secondary effect is the appearance of the so-called "renal crush syndrome" which is associated with shock, muscular necrosis and renal oedema with tubular lesions. In animals, relief has been afforded by bilateral decapsulation of the kidneys. The flash produces both direct and indirect burns of the greatest severity, but is only of momentary duration. The radiations exercise their effect either externally or internally. Cells which are rapidly dividing are the most susceptible to injury. The main findings in animals exposed at Bikini were anaemia; leucopenia; increased coagulation time of the blood; degeneration of the liver, ovaries and testes; depilation; and, secondary infections. The veterinary problems mainly relate to the civil and military animals and foodstuffs in an affected area and fully equipped mobile veterinary units must be established to deal with these problems.—J. A. NICHOLSON.

COGAN, D. G., MARTIN, S. F., & KIMURA, S. J. (1949.) **Atom bomb cataracts.** *Science.* **110.** 654-655. **3428**

These cataracts developed in ten subjects 6-30 months after the atomic explosion at Hiroshima. All patients were at the time 550-950 m. from the hypocentre of the explosion. Most patients who were in that area died of radiation sickness, but these ten patients were partly shielded by cars or houses. It is considered that these cataracts were similar to those which have been previously associated with exposure to X- and γ-rays.—E. EDEN.

REPORTS

(1948.) **Great Britain. The Edinburgh and East of Scotland College of Agriculture. Report on the work of the College for the year ending 30th September, 1948.** pp. 103 Items of veterinary interest pp. 61-65. Edinburgh: The College. **3429**

The work being done by the Veterinary Investigation Service is described. Many visits have been paid to farms and the routine diagnostic service has greatly increased. From the general results of the work it is suggested that:—

In sheep, PARASITIC GASTRITIS AND ENTERITIS, with or without PARASITIC BRONCHITIS is by far the greatest cause of loss. JOHNE'S DISEASE is an important source of loss in cattle. ARSENIC AND LEAD POISONING IN CATTLE are of economic importance. ABORTION IN SHEEP is a major disease in the area. LOUPING-ILL is still a source of loss on some hill farms. JOHNE'S DISEASE IN SHEEP, TICK PYAEMIA, PNEUMONIA OF SHEEP and CALF SCOURS are very important causes of loss on some individual farms.

Among the conditions investigated were: ABORTION OF EWES in Berwickshire, hill sheep ABORTION, "DAFT LAMB" DISEASE (Cortical Cerebellar Atrophy), thought to be hereditary, DROPSY IN CALVES (investigated in conjunction with the Ministry of Agriculture), CALF PNEUMONIA, experiments on the use of diaminodiphenylsulphone in the treatment of JOHNE'S DISEASE and tests on the use of D.D.T. for the control of ticks and blow-fly. Unfortunately the latter experiment was wasted owing to a break in the emulsion of D.D.T. in the bath.

The work on the pathology of BOVINE TB., commenced some years ago under the A.R.C. grant, was completed.

In the laboratory 170 P.M. examinations were made and 2,174 specimens examined and dealt with—D. S. RABAGLIATI.

(1949.) **Great Britain. The Edinburgh and East of Scotland College of Agriculture. Report on the work of the College for the year ending 30th September, 1949.** pp. 102. Items of veterinary interest pp. 61-65. Edinburgh: The College. **3430**

The development of the Veterinary Investigation Service has proceeded along the same lines as in previous years. The routine diagnostic and advisory service provides a considerable contribution towards the improvement of animal health. 213 P.M. examinations were made and 3,039 specimens examined for diagnostic purposes.

A large number of advisory visits has been made and the following conditions met with and investigated:—"ORF", FOOT ROT, MASTITIS of all types, PIGLET ANAEMIA, NUTRITIONAL DEFICIENCIES in pigs, BRACKEN POISONING, TICK-BORNE FEVER in sheep, LOUPING-ILL in cattle and sheep, PINING in sheep, CONTAGIOUS OPHTHALMIA in cattle and sheep, CONTAGIOUS VAGINITIS in cattle as a cause of STERILITY, HAEMORRHAGIC SEPTICAEMIA in cattle, PASTEURELLA PNEUMONIA in sheep, JOHNE'S DISEASE in sheep and cattle, strain 19 breakdowns, varying types of JOINT-ILL, PREGNANCY TOXAEMIA in sheep, tick eradication methods, PULPY KIDNEY DISEASE and ENTEROTOXAEMIA, ACTINOBACILLUS ABSCESS in sheep, WINTER DYSENTERY in cattle, STERILITY in cattle, MANGE in cattle,

Parasitic Gastro-Enteritis, Arsenic Poisoning, Calf Scours and Tick Pyaemia in sheep.

Special investigations were carried out on Border "Orf", Contagious Pustular Dermatitis and "Strawberry Foot Rot", all affecting the skin of sheep, to show whether these are related and, if so, their relationship one to the other. Also on secondary invaders in Contagious Pustular Dermatitis, to find what organisms are involved in "Orf" as found in the Scottish Borders and to determine the part played by these organismms in the production and the severity of the lesion.

The work on Abortion in sheep has been continued but it is thought not to be bacterial in origin even though it is still thought to be infectious. A trial vaccine has been made and is being tried out in the field. The work, although promising, is in its early stages and further evidence is required.

A disease resembling Johne's Disease has been encountered in Border sheep and investigations continued in co-operation with the Ministry of Agriculture in respect of Dropsy in calves.—D. S. Rabagliati.

du Toit, C. G. (1949.) **Union of South Africa. Annual Report for 1949 of the Directorate of Meat Supplies.**—*Fmg S. Afr.* **24.** 605-614. **3431**

The number of cattle slaughtered was 821,000, an increase of nearly 40,000 on the previous year, which increase has been steadily maintained since 1944-45. Over 1,400,000 sheep and goats were slaughtered, a slight increase after several years of decrease. The number of pigs slaughtered increased by 180,000 to 530,000, a surprisingly high figure. Unfortunately supplies were not regular so temporary scarcities of meat occurred. 70-80% of the surplus carcasses were placed in cold storage. 70% of the slaughtering occurs in urban areas and the remainder in rural areas. The average weight of the cattle carcasses had increased by 27 lb. and there was considerable improvement in the quality, super-prime and first grade beef forming 25·7% of the total as against 22% of previous years. Meat consumption per head varies from 81·6-130 lb. per year. The Directorate purchases and sells meat to establish price stability, and also, by storing in times of surplus, endeavours to ensure a uniform supply throughout the year.—R. Macgregor.

Anon. (1949.) Rapport du chef des Services vétérinaires et de l'Industrie animale pour la période de 1940 à 1946. [**Report of the Director of Veterinary Services, Mozambique, for the period 1940-1941.**]—*Bull. Off. internat. Epiz.* **31.** 130-138. **3432**

The Veterinary Service and that of Animal Industry were divided into the following branches:—the Health and Hygiene of cattle, Animal Economics, Animal Husbandry and the Encouragement of Cattle-breeding and a Division of Veterinary Pathology. The Veterinary Service is now well established.

The Division of Animal Health is under the Director of Services and works through a delegation drawn from the four provinces of the Colony. The organization of the service is explained.

The following diseases have occurred and been dealt with:—Anthrax which appeared not only in cattle, but also in pigs and goats, all of which were vaccinated; Blackleg also occurs but is less frequent. Vaccination was carried out in districts where it generally appeared. The total and partial seizures of carcasses in the abattoirs on account of TB. indicated its extent. The compulsory testing of cattle used for milk production has enabled the reactors to be slaughtered in the abattoirs. In 1943, 10,349 cattle were tested and in 1944, 8,931, showing a percentage of reactors of 4·9%.

Pasteurellosis has not been a serious trouble, although a few cases have been recorded. Between 1942 and 1946, about 300 blood samples were examined for Contagious Abortion, of which 80 proved to be positive. Slaughter of the reactors was recommended. Amongst other diseases noted were Newcastle Disease and Pullorum Disease in fowls, Lumpy Jaw in cattle, Trypanosomiasis, Tick-Borne Diseases, Babesiasis, Anaplasmosis, East Coast Fever and Heartwater.

Prophylactic measures against tick-borne diseases are based on dipping with acaricide preparations.—D. S. Rabagliati.

BOOK REVIEWS

Anon. (1950.) **Brucellosis. A Symposium under the Joint Auspices of National Institutes of Health of the Public Health Service. Federal Security Agency, United States Department of Agriculture, National Research Council.** pp. 271. Washington: American Association for the Advancement of Science. **3433**

This monograph is composed from the papers at a symposium in September, 1949, and

it provides a very complete and authoritative summary of present-day knowledge of the disease both in man and in animals.

It comprises 24 papers, of which four deal with the disease in the human subject, the remaining twenty being of direct veterinary interest. They cover all aspects of the subject such as the physiology of the causative organism, immunology, epidemiology, diagnosis, therapy and control.

The more important of these papers are being abstracted separately. The book can be recommended with confidence to research workers, field control officers and practitioners. —M.C.

CLIFTON, C. E., RAFFEL, S., & BARKER, H. A. [Edited by.] (1949.) **Annual review of microbiology.** pp. 476. Stanford, California: Annual Reviews, Inc. Vol. III. $6.00. **3434**

It is not possible in a short review to do more than indicate the contents of this volume which will be of special interest to veterinarians. They include the chapters on the actions of antibiotics *in vivo* (Cutting), the cellular basis of immunity (Taliaferro), virulence and pathogenicity (Watson and Brandly), dermatropic viruses (Buddingh) and types of acquired immunity against infectious disease (Raffel). The bacteriologist will find much of interest also in the papers on bacterial variation (Lederberg); the morphology, cytology, and taxonomy of the actinomycetes (Erikson); ciliated protozoa (Sonneborn); metabolism of micro-organisms (Umbreit); nutrition of micro-organisms (Snell); constituents of viruses (Knight); types of acquired immunity against infectious disease (Raffel); oral microbiology (Harrison); food microbiology (Halvorson); the growth of bacterial cultures (Monod); recent developments in microbiological techniques (McClung); and bacteriophage (Fong), and will appreciate the extensive bibliographies which are appended to each chapter.—E. G. WHITE.

HALIMANN, L. (1950.) Bakteriologie und Serologie. Ausgewählte Untersuchungsmethoden für das bakteriologische und serologische Laboratorium. [**Bacteriology and serology. Selected experimental methods for the bacteriological and serological laboratory.**] pp. xi + 644. Stuttgart: Georg Thieme. DM. 29.70. **3435**

The author calls this extremely well produced book—clearly printed on calendered paper, with a washable linen cover—a book from the practitioner for the practitioner. It deals primarily with technique. Illustrations, tables and experimental procedures are excellently arranged for practical use. A short conventional description of a group of bacteria is followed in each case by a description detailing the best way to collect and preserve the material and giving a schematic representation of the required series of tests. Small technical points of importance are specially emphasized. Animal experiments are not neglected.

The book also contains a useful chapter on general work in the general bacteriological laboratory and especially the sectional hospital laboratory. In one section methods of collecting, preserving and testing materials are arranged under the headings of particular diseases. The section on staining is on yellow paper to make it more readily found. Lists of reagents and indicators are dealt with in the same way. A summary is given of first aid treatments for accidents with pathological materials and an enumeration of the most important German laws applicable to bacteriological laboratories.

Theoretical considerations are not within the scope of the book. Bergey's manual is quoted, but the nomenclature used is extremely mixed. The random use of trivial names is irritating to the reader, especially in tables of a more general nature, *e.g.* p. 10: *"Influenza-Bakt."*, *Lepra-"Bakt."*, *Botulinus-"Baz."*, etc. There are also some typographical errors, *e.g.* on p. 196: "Myobacterium". A more serious objection is that most of the recent literature on special techniques, given in an appendix, is rather old. Original papers are quoted almost entirely from the German literature. The few foreign references that do appear are of very ancient vintage. On the whole, this is a book which could easily be much improved and then become very popular, with its 374 partly coloured and well reproduced illustrations. —R. FRIEDMANN.

BELLER, K., & BIELING, R. (1950.) Viruskrankheiten. Zweiter Teil. Die Viruskrankheiten der Haus-und Laboratoriumstiere, ihre Erreger und ihre Bekämpfung. [**Virus diseases. Part II. Virus diseases of domestic and laboratory animals.**] pp. viii + 278. Leipzig: Johann Ambrosius Barth. 2nd Revised Edit. DM. 12.60. **3436**

The first edition of this very condensed and closely printed little book [see *V.B.* **16.** 261] went quickly out of print, and this very much revised edition will be a welcome addition to most veterinary and pharmacological libraries. [Part I dealt with virus diseases of human beings.] The authors apologize for the omission of foreign works not accessible to them. Nevertheless, each sub-division is well documented with references to original papers up to 1949.

There are three introductory chapters, dealing with the general properties of pathogenic viruses, and the forms of infection and immunization procedures against them. In the absence of an established terminology for viruses, the authors discuss viruses not from the aetiological point of view, but according to general characteristics of the disease produced. Equine infectious anaemia, distemper, Newcastle disease and others are classed together as "General diseases". A chapter on pox diseases follows and the authors then deal with diseases affecting particular organs and systems. Each chapter is sub-divided according to the animal species affected. Each division starts with a historical account of the dissemination and the economic importance of the disease, followed by an enumeration of the properties of the causal agent and descriptions of symptoms and lesions. Each division ends with a discussion of control measures, especially with reference to immunization. The dangers of spreading disease by immunization procedures through the creation of immune carriers are particularly stressed. A chapter is devoted to tumour-virus relations in animals. There is one on "micromycoses" which includes diseases such as broncho-pneumonia of rats, bovine contagious pleuro-pneumonia and coryza-like infections. A chapter deals with rickettsial diseases and another with bacteriophages.

The paper of this useful little book is of rather poor quality.—R. FRIEDMANN.

HIERONYMI, E. [Revised by.] (1949.) Schmid. Diagnose und Bekämpfung der parasitären Krankheiten unserer Haustiere. [**Schmids diagnosis and control of parasitic diseases of livestock.**] pp. viii+264. Berlin: Richard Schoetz. 5th Edit. **3437**

The custom, followed by many textbooks, of reviewing parasitic groups in strictly zoological sequence, and with little regard to the hosts they parasitize, is often inconvenient in a work of reference. One frequently wishes to refer to a book during an examination of parasites isolated from a specific host. How often is one compelled to consult, and consult with little profit, an index which engenders feelings of frustration and consequent irritation because the search for what one wants is protracted and, possibly, futile? There is much to be said for a system which considers parasitic forms under the headings of the host species. The book now under review adopts this system and its merits became evident when several test references were made. The information required was quite easily found by merely referring to the list of contents and without any reference at all to the excellent index provided. As a textbook, and it pretends to nothing more, this revised work can be recommended as an up-to-date account of the parasites of domestic animals (including even those of the nutria) and their control, as well as of the principles and techniques of parasitology. Production, both in regard to layout and illustration, is wholly admirable. There is a useful list of standard works of reference; the work of individual investigators is mentioned in the appropriate parts of the text, but no detailed information about their publications is recorded which perhaps is unnecessary in a book of this sort.

—C. HORTON SMITH.

MCCAY, C. M. [Professor of Nutrition, Department of Animal Husbandry in Cornell University.] (1949.) **Nutrition of the dog.** pp. x+337. Ithaca, New York: Comstock Publishing Co. Inc. 2nd Edit. 30s. **3438**

This easily readable book will appeal to many people. Not only are the various nutritive requirements of the dog discussed at length but the ingredients of different dog feeds are also given. Manufacturers of these products will find especially useful the chapter on how to test the nutritive value of a diet.

Other chapters deal with such topics as parasites, housing and general hygiene. Further reading matter is recommended and at the end of each chapter there is a list of references to relevant up-to-date scientific publications.—E. EDEN.

LIÉGEOIS, F. (1949.) Traité de pathologie médicale des animaux domestiques. [**Veterinary clinical medicine.**] pp. xxv + 926. Paris: Librairie Agricole de la Maison Rustique. 3rd Edit. Fr. 4,075. **3439**

This book deals with the diagnosis, causation and treatment of the non-specific diseases. The matter is arranged according to organ systems, for example Digestive System, Respiratory System, etc.; there is also a section dealing with vitamins and avitaminoses. Although there is no separate section dealing with deficiency diseases and metabolic disorders, the importance of errors of nutrition is stressed in the causation of many of the conditions which are discussed. The microscopic appearances of diseased tissues are not dealt with. The author's object as stated in the preface has been to acquaint students and practitioners with advances in recent years and to indicate the direction in which medicine is moving in order to clarify causation and to guide treatment. The names of various authorities, especially those of France, are quoted freely in the text

but references to their published works are not given. There is a short index.—M.C.

BOURNE, G. H. [Reader in Histology in the University of London at the London Hospital Medical College.] (1949.) **The mammalian adrenal gland.** pp. vi + 239. Oxford: Geoffrey Cumberlege, Oxford University Press. 30s. **3440**

The mass of literature which has been accumulating on the adrenal bodies since their first recorded presence by Eustachius in 1563 is ably collected and sorted out in this book.

The historical review follows a logical sequence and is most interesting reading. There follows brief reference to other than mammalian forms which gives support to the statement that the medulla and cortex in all mammals are comparable embryologically with the chromaffin and the interrenal bodies of lower vertebrates.

A most valuable section is that containing descriptive notes on the glands in members of the orders and families in a classified list of mammals. Much is the direct result of the author's own investigation and he expresses his indebtedness to his Australasian associations in this respect. Without doubt this section should stand as a reference of the highest order for future workers on these most important structures.

The book concludes with a chapter summarizing mammalian adrenal glands in which testimony is given to their constancy of form. Only in the Monotremata is the adrenal gland not differentiated.

This book can be highly recommended.

—C. W. OTTAWAY.

HESS, W. R. [Professor of Physiology, Zürich University.] (1948.) Die funktionelle Organisation des vegetativen Nerven-systems. [**The functional organization of the autonomic nervous system.**] pp. 226. 80 figs., 1 table. Basel: Benno Schwabe & Co. Swiss Fr. 18.50. **3441**

This monograph is written by an experimental physiologist who, with his colleagues, has contributed much to our knowledge of the autonomic nervous system over a period of more than twenty years. The book represents an attempt to bring together existing knowledge of the autonomic nervous system and to show how recent work on the functions of the hypothalamus helps to provide a picture of the organization of the system as a whole and in relation to the other activities of the intact organism.

There are chapters on the peripheral autonomic activity of smooth muscle, the synergic co-ordination of the various sectors of the autonomic system, the localization of the centres in the hypothalamus, the relation between nervous and hormonal control and the influence of the cerebral cortex.

The text is profusely illustrated with charts, diagrams and photographs and there is a good bibliography. The legends to the illustrations are printed in German and English. The book will be of much interest to experimental physiologists.—E. G. WHITE.

RICHTER, J., & GÖTZE, R. [Edited by.] (1950.) Lehrbuch der Tiergeburtshilfe. [**Animal obstetrics.**] pp. xii + 699. Berlin: Richard Schoetz. DM. 42.—. **3442**

This book deals essentially with the physiology and pathology of the late stages of pregnancy, parturition, the puerperium and the early life of the young.

The process of normal birth is well described under the headings of the various stages of parturition and with references to the individual species. It is felt, however, that the reader does not get a clear-cut picture of the normal process of parturition in any single species—a point which is important if the young obstetrician is to recognize the moment when parturition has ceased to be normal.

Expulsion of the foetal membranes is dealt with as part of the puerperium rather than of birth. The chapter on the normal puerperium (Richter) teems with solid information based on observations in the German schools over many years.

Dealing with retention of the foetal membranes, it is estimated that the incidence in cattle in Germany is between 3 and 5% of all births and Götze considers an infective placentitis, which may commence weeks or months before birth, to be the cause of 98% of such cases. The infection picture, however, tends later to be obscured by the statement that 80% of retentions are due to *Brucella abortus* infection. In this connexion it is felt that a clear cut distinction should be made between retentions due to *Br. abortus* and those due to other, non-specified infections. In the treatment of the condition, Götze favours early manual removal of the membranes, but insists that the operation shall be performed under epidural anaesthesia and with the most scrupulous regard to surgical cleanliness. He gives in great detail a technique to be followed. He apparently regards manual interference, other than in the careful manner described by him, to be harmful. He does not favour any form of douching of the infected uterus of the cow, but speaks highly of it in regard to the mare. He explains this by stating that the anatomical form of the

equine uterus makes subsequent removal of all fluids by siphonage possible, whereas this is not the case in the cow.

Torsion of the uterus is dealt with at great length (Lagerlöf and Götze) and one is again struck by the wealth of carefully kept records on which the authors were able to draw. In this connexion also striking figures as to incidence are quoted. The overall figure is put at 10·6% of bovine cases of dystocia, but in the hilly areas of South Germany, Switzerland and Sweden, and in animals which are continuously housed, it may reach from 30-70%.

Definite statements are made regarding the degrees of torsion. The majority are said to comprise from 90°-180° although many cases are quoted of 270° and even 360°. It is stated that in cases of not more than 180°, the hand can be passed into the uterus without much difficulty; at 270° it is difficult but not impossible and at 360° it is impossible. English experience would indicate that the great majority of our cases must be of 360° (which we doubt) or that the accuracy of the above statements is questionable.

Uterine torsion in the mare also receives full and detailed attention. In the Hanover clinic, torsion is said to cause 5-6% of cases of dystocia in the mare. In England it is regarded as a very rare form of equine dystocia. An interesting observation in regard to diagnosis is that in nearly all cases the rectum also is twisted and narrowed.

The treatment of dystocia in the mare and cow by manipulation *per vaginam* and by embryotomy is dealt with in detail (Benesch and Götze) on conventional lines. References to the dog, however, are scanty and as a text on canine obstetrics the book is inadequate.

Some nine pages of text are devoted to caesarean section (Benesch) and it is stated that in spite of improvements in technique during recent years, this operation plays a subordinate role to embryotomy in so far as the mare and cow are concerned, but B. speaks highly of its value in the pig and bitch. There is little reference to the technical details of operation and practically nothing on such important matters as anaesthesia and restraint.

Metabolic disorders during the puerperium and diseases of the new-born animal are dealt with in considerable detail (Götze).

The book is profusely illustrated not only with diagrams but with a large number of photographs and coloured photographs. We must, however, confess that many of the latter do not convey a great deal to us.

The editors express the hope that this new textbook may provide a useful and comprehensive guide for the student, a useful source of help to the practitioner and something of a basis for further research and development. We would assure them that they have succeeded on all three scores.—J. G. Wright.

Götze, R. (1950.) Neuzeitliche Embryotomie bei Pferd und Rind. [**Embryotomy in horses and cattle.**] pp. 115. Hanover: M. & H. Schaper. 4th Edit. DM. 6.60. **3443**

The fourth edition of this book was prepared in response to a strong demand. The subject has here been well explored and numerous procedures are available for the section of a foetus presenting itself in a variety of positions. These procedures are illustrated by some 70 photographs which show the methods clearly. The wire saw embryotome of the type first described by Thygesen is alone featured, this type having been generally accepted as universally effective.

In addition to embryotomy, consideration is given to caesarean section and two techniques for the cow are described.

The book is a leading treatise on its subject and ought to be well received.—J.E.

Green, D. E. [Ph.D.] & Knox, W. E. [M.D.]. [Edited by.] (1950.) **Research in medical science.** pp. viii + 492. New York: The Macmillan Co. London: Macmillan &. Co., Ltd. 48s. **3444**

The 29 papers which make up this book deal with a number of widely different subjects. In the introduction it is pointed out that medical research is no longer the sole province of the medically qualified worker: many other disciplines are now required. This development has given rise to what the editors call " a new breed of hybrid investigators" and the object of this book is to enlighten the non-specialist on work proceeding and problems to be faced in a number of specialities. The papers are in essay form and give a very helpful picture of the broad foundations upon which medical research now rests.

Some of the papers will interest only workers in human medicine but the veterinary worker will find many of them of great interest, for example The Viruses by Burnet, F.M.; Immunochemistry by Kabat, E. A.; Bacteriophages by Anderson, T. F.; Rickettsial diseases by Rose, H. M., and so on. The papers of more direct veterinary interest will be abstracted separately.—M.C.

Albertsen, K., Hansen, J. P., & Vejlstrup, C. G. [Edited by.] (1950.) Dansk veterinaerhistorisk aarbog. [**Danish yearbook of veterinary history.**] pp. 147. Copen-

hagen: Dansk Veterinaerhistorisk Samfund. A/s Carl Fr. Mortensen. **3445**

This yearbook covers the two years 1948 and 1949, the publication of a yearbook in 1948 having been impossible owing to work on a volume celebrating the centenary of the Danish Veterinary Union.

The first section, by Albertsen, K., is a history of the veterinarians of Silkeborg from the foundation of the town in 1846 up to 1947, and gives a biography of each of them. The other sections include: The Danish Veterinarian, by Hansen, J. P.; Foreign travel Memoirs from the year 1859, by Krause, J. G.; and Memories of a former Chairman of the Veterinary Union, by Hansen, C. H.—F.E.W.

BOOKS RECEIVED

[Notice of recently received books in this list does not preclude review.]

Bénard, H., Gajdos, A., & Tissier, M. (1949.) Hémoglobine et pigments apparentes. Myoglobines, catalases, peroxydases, cytochromes, porphyrines, pigments biliaires. [**Haemoglobin and blood pigments.**] pp. 350. Paris: Masson et Cie. Fr. 1350. **3000**

Beveridge, W. I. B. (1950.) **The art of scientific investigation.** pp. xii + 171. Melbourne, London and Toronto: William Heinemann Ltd. 10s. 6d.

Burnet, F. M., & Fenner, F. (1949.) **The production of antibodies. (Monograph of the Walter and Eliza Hall Institute, Melbourne.)** pp. viii + 142. Melbourne and London: Macmillan & Co. Ltd. 2nd Edit. 12s. 6d.

Chambon, M. (1950.) Chimiothérapie des maladies à bacilles acido-résistants. [**Chemotherapy of diseases caused by acid-fast bacilli.**] pp. 98. Paris: Masson et Cie. Fr. 380.

Conn, H. F. [Edited by.] (1950.) **Current therapy, 1950. Latest approved methods of treatment for the practising physician.** pp. xxxii + 736. Philadelphia and London: W. B. Saunders Co. 50s.

Frugoni, C., Magrassi, F., & Giunchi, G. (1949.) Le malattie dell' apparato repiratorio da virus e da rickettsie. [**Respiratory diseases caused by viruses and rickettsia.**] pp. xii+364. Rome: Luigi Pozzi.

Graham, R. M., et al. (1950.) **The cytologic diagnosis of cancer.** pp. xiii + 229. Philadelphia and London: W. B. Saunders Co. 33s.

Hallmann, L. (1950.) Bakteriologie und Serologie. Ausgewählte Untersuchungsmethoden für das bakteriologische und serologische Laboratorium. [**Bacteriology and serology. Selected experimental methods for the bacteriological and serological laboratory.**] pp. xi+644. Stuttgart: Georg Thieme. DM. 29.70.

Harrow, B. (1950.) **Textbook of biochemistry.** pp. 609. Philadelphia and London: W. B. Saunders Co. 5th Edit. 30s.

Hawking, F., & Lawrence, J. S. (1950.) **The sulphonamides.** pp. vii+389. London: H. K. Lewis & Co. Ltd. 42s.

Hayes, M. H. [Revised by Tutt, J. F. D.] (1950.) **Veterinary notes for horse owners. A manual of horse medicine and surgery.** pp. 655. London, New York, Melbourne, Sydney and Cape Town: Hurst & Blackett Ltd. 14th Edit. 50s.

Lachenschmid, B. (1950.) Leitfaden der Trichinenschau. [**Guide for *Trichinella* inspection.**] pp. ix + 173. Stuttgart: Ferdinand Enke. DM. 8.— & DM. 9.80.

O'Connor, J. J. [Edited by.] (1950.) **Dollar's veterinary surgery. General, operative, and regional.** pp. xiv + 1036. London: Baillière, Tindall & Cox. 4th Edit. 35s.

Thomas, P. E. L. (1949.) **A guide for authors. Manuscript, proof, and illustration.** pp. viii+85. Springfield, Ill.: Charles C. Thomas. Oxford: Blackwell Scientific Publications, Ltd. $1.00.

West, T. F., & Campbell, G. A. (1950.) **DDT and newer persistent insecticides.** pp. xiv + 632. London: Chapman & Hall, Ltd. 2nd Edit. revised. 50s.

Wright, G. P. (1950.) **An introduction to pathology.** pp. x + 569. London, New York and Toronto: Longmans Green & Co. 30s.

Zietzschmann, O., & Nickel, R. (1950.) Leitfaden der Anatomie der Haustiere. [**Guide to the anatomy of domestic animals.**] pp. 219. Hanover: Wissenschaftliche Verlagsanstalt K.-G. DM. 9.—.

Anon. (1950.) **Symposia of the Society for Experimental Biology. IV. Physiological mechanisms in animal behaviour.** pp. vi + 482. Cambridge: The University Press. 35s.

INDEX VETERINARIUS

The publication of *Index Veterinarius* commenced with the indexing of the literature of 1933. It is a complete index of current publications relating to veterinary research, public health, administration, education and other aspects of veterinary science.

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TECHNICAL COMMUNICATIONS, ETC.

Commonwealth Bureau of Animal Health, Weybridge.

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p. 277, abst. **1257**, line 3 of title. For "*Physical Rev.*", read "*Physiol. Rev.*"
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